NOVEMBER 1985 $3.95
VOLUME 3 ISSUE 3

portable 100/200

FOR USERS OF TANDY BRIEFCASE COMPUTERS

DD04*93406MUIRPO*BOX5 DEC86
E MUIRA
PO BOX 14334
SAN LUIS OBISPO CA 93406

...DY PORTABLE DISK DRIVE
...TER THE SECOND TIME AROUND

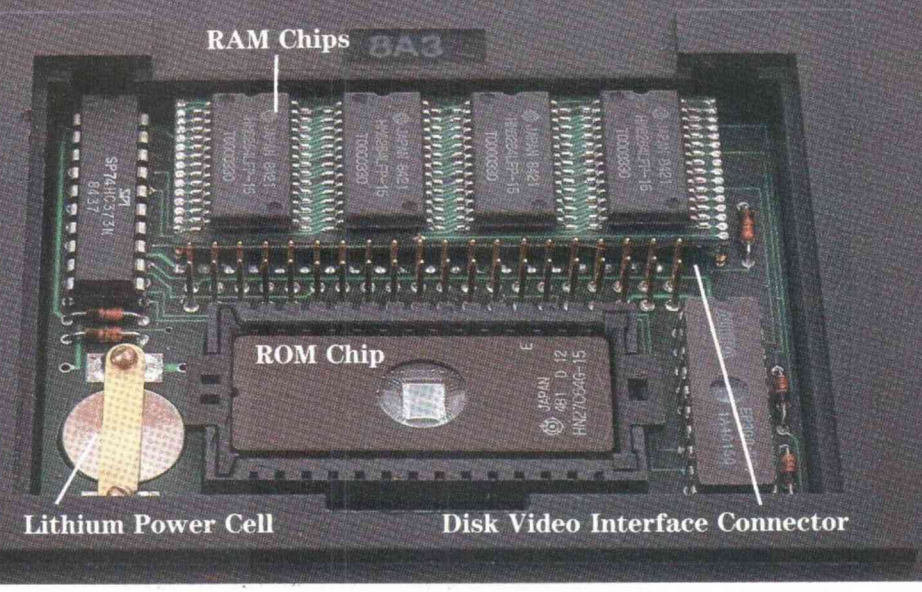
RADIO TALK
Morse Code on your 100

WHERE PROGRAMS HIDE
Machine Language Storage Explained

INTERACTIVE SOLUTIONS
ROM-ware from Fort Worth

...OMING NEXT MONTH:
...andy 600 Review

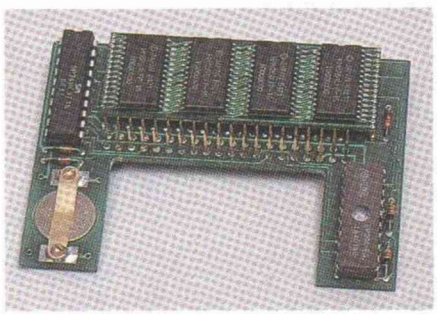
State of The Art RAM Technology



At last, a 96K Model 100!
"The new PG Design RAM should be in every Model 100 built!"

Miniaturized Technology

Our miniaturized RAM chips are state of the art. They are the most advanced memory chips found anywhere in the world. Their tiny size allows us to keep a low profile in the expansion port of the Model 100. We use a technique called *vapor phase soldering* to ensure that each and every tiny connection is clean — perfect.



The RAM module is precision constructed.

Like The Original

Each 32K RAM bank has its own command of the software that comes in your Model 100. BASIC, TEXT, TELCOM, ADDRSS, SCHEDL are all there in each bank and you can use them as you would in the original bank. Each bank can be accessed from any of the other banks. We even have an optional data transfer program which allows data to be transferred from one bank to any other bank. It's flawless!

Simple Installation

"Adding this 64K RAM module to your Model 100 is as easy as putting in new batteries." Once you've removed the expansion cover on the back of your Model 100, just snap the **PG Design** RAM module in. You can't get it wrong! The pins line up perfectly with the expansion holes in the Model 100 compartment. Snap the cover back on and turn your Model 100 over. Turn it on and enter BASIC. Type in the one line program we supply you and presto—you've got a Model 100 with 96K of RAM. You do not need a 32K Model 100 to utilize the **PG Design** 64K RAM module.

No Need To Remove It

The beauty of this RAM module is that we've enabled you to have a Model 100 with 96K of RAM and we've given you access to the other Model 100 options within the expansion compartment. The DVI connection can be made easily with our rugged connectors. Gone are the flat flimsy pins. And best of all, the ROM slot is clear to insert any ROM modules, (like Tandy's Multiplan on ROM). We designed this RAM module so it wouldn't ever have to be removed from your Model 100. But, if you should remove it, we've installed a lithium power cell that will keep all the data on the module intact for six months outside the Model 100. Six months! The actual life span of the lithium power cell while in the Model 100 is nearly six years!

Guarantee

We stand behind all the products we manufacture at **PG Design.** If you are not completely satisfied with your purchase, call us! If we cannot solve your problem, return the product to us and we will refund your money. We are positive that you will be completely satisfied with all our products.

Order Today

64K RAM module — $375
32K RAM module — $250
If you want only a 32K version of the RAM module, you may upgrade later for only $150. The 32K version is constructed exactly as the 64K module.

Data Transfer Program — call

Call us at 313/727-2744, or write. We accept Visa and MasterCard, as well as check or money orders. We ship within five days of receiving your order.

Dealer Prices Available

TRS-80 is a trade mark of Radio Shack

PG DESIGN ELECTRONICS, INC. *Micro-Computer Peripherals*

66040 Gratiot, Richmond, Mich. 48062 (313) 727-2744

Circle 39 on Reader Service Card

What People Are Saying About Traveling Software®...

For TRS-80 Model 100, NEC PC-8201, and Olivetti M10 laptop computers:

IDEA™

"This thing is fantastic. I can write proposals in about 50% of the time it took previously, I can organize presentations better — I use it for just about everything." Jonathan W. Pearce, C.P.A.

"I found it an invaluable tool. It has become as much a part of my 100 as Text and Telcom, like a second skin." John P. Mello, Portable 100/200, March, 1985

Organize anything from simple lists to complex outlines. Easily reorganize and search. Use word processing and database capabilities. Develop outlines from rough drafts into complete papers. $79.95

T-backup™

"Your program is super, and a real time saver." Bruce Arnold, special sales manager.

"Your T-backup program is the most useful that I have ever purchased for my Model 100. Keep up the good work." Thomas Fehsenfeld, customer.

Save the entire contents to cassette from RAM in minutes, rather than back up files individually. Check the integrity of saved data copies. Restore data from cassette. $19.95

T-base™

"Cramming the complexity of a relational database manager into a portable computer ... may seem ambitious ... Yet Traveling Software's T-base handles the challenge with surprising grace..." P. Gregory Springer, InfoWorld, December 10, 1984

Design relational data bases. Set up screen files. Borrow information from fields in other data bases. Perform math computations. Create custom-printed or LCD display reports. $99.95

T-Writer™

"...all that it is advertised ... superior in many aspects to the WRITE+ program that I used previously." John J. Atkins Jr., food service director.

Print documents created using the built-in TEXT program. Include justification, headings, footings, underlining, italics, boldface, and more. Produce form letters and mailing labels. $49.95

Traveling Appointment Manager™

"The program and manual were user friendly . . . an excellent value." Mary Jeann Batham, Portable 100/200, May 1984

Maintain a detailed list of appointments and things-to-do. Consult on-screen or printed records. Automatically reschedule recurring appointments. $59.95

Traveling Expense Manager™

"...the Traveling Expense Manager is well-thought-out and keeps track of exactly the type of information that you need while you are on the road. It's everything you need to keep your boss — and the IRS — happy." Dan Robinson, InfoWorld, July 30, 1984

Define expense categories. Record expenses to any account. Indicate if a business expense is billable. Produce reports by client or project, and the type of expense. $59.95

Traveling Project Manager™

"...very useful in helping me track my projects ... simple ... provides useful data and printouts." J. Michael Masterson, strategic projects manager

Simultaneously manage several projects — small or large. Enter dollar or other unit expenditures. Produce a variety of summaries and printed reports. $59.95

Traveling Sales Manager™

"I spend a lot of time on the road and find the Traveling Sales Manager useful... The manual, in particular, was outstanding." Don Gillespie, salesman

Keep a detailed log of customers and contacts. Record what customers purchase and when. Store important biographical data and reminders to call on customers. $59.95

Traveling Time Manager™

"...first-class software, a valuable tool for consultants and others billing clients by the hour." John P. Mello, Portable 100/200, April 1984

Track time spent on projects or for a client. Apply your own billing rate. Indentify time expenditures as billable or nonbillable. $59.95

To order, or find the dealer nearest you,

CALL 1-800-343-8080

For information or technical assistance,

CALL (206) 367-8090

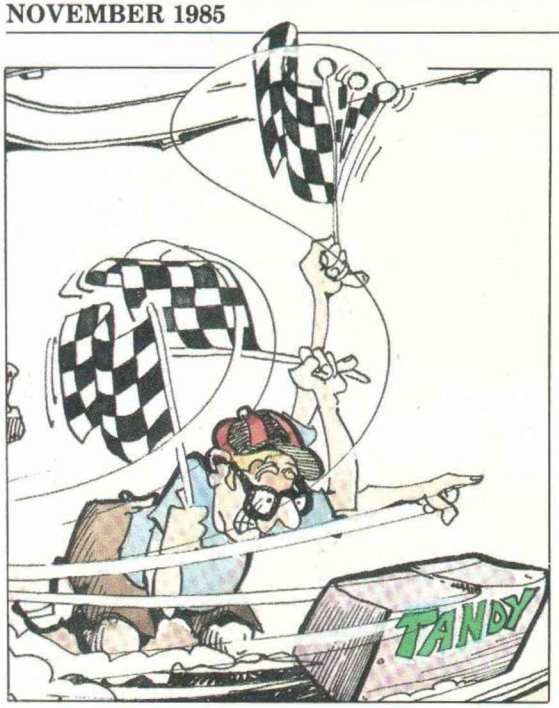
TRAVELING SOFTWARE®

Traveling Software, Inc.
11050 Fifth Avenue, N.E
Seattle, WA 98125
(206) 367-8090

Circle 58 on Reader Service Card

portable 100/200

NOVEMBER 1985 VOLUME THREE, NUMBER THREE



ON THE COVER

TANDY ENTERS THE FRAY 34
The portable disk drive market heats up with the latest from Fort Worth. A good dependable machine, it's not going to lead the pack but it'll keep competitors looking over their shoulders.
By Park M. Morrison

Cover Photo by Benjamin Magro

ARTICLES

THAT COMPOUNDING INTEREST 11
Calculate future values with your Model 100.

A SUPER INPUT ROUTINE 17
How to customize screen input.
By Rick Rothstein

HELLO RANGOON 32
Use a portable to communicate in Morse code.
By Louis C. Graue

CONSERVING PRECIOUS MEMORY 44
Machine-language storage explained.
By Jim Irwin

FINDING A NEEDLE IN A HAYSTACK 62
A program to search many files automatically.
By Leo S. Reich

TANDY'S ROM 70
Introducing a three-in-one ROM package of their own.
By Carl Oppedahl

REVIEWS

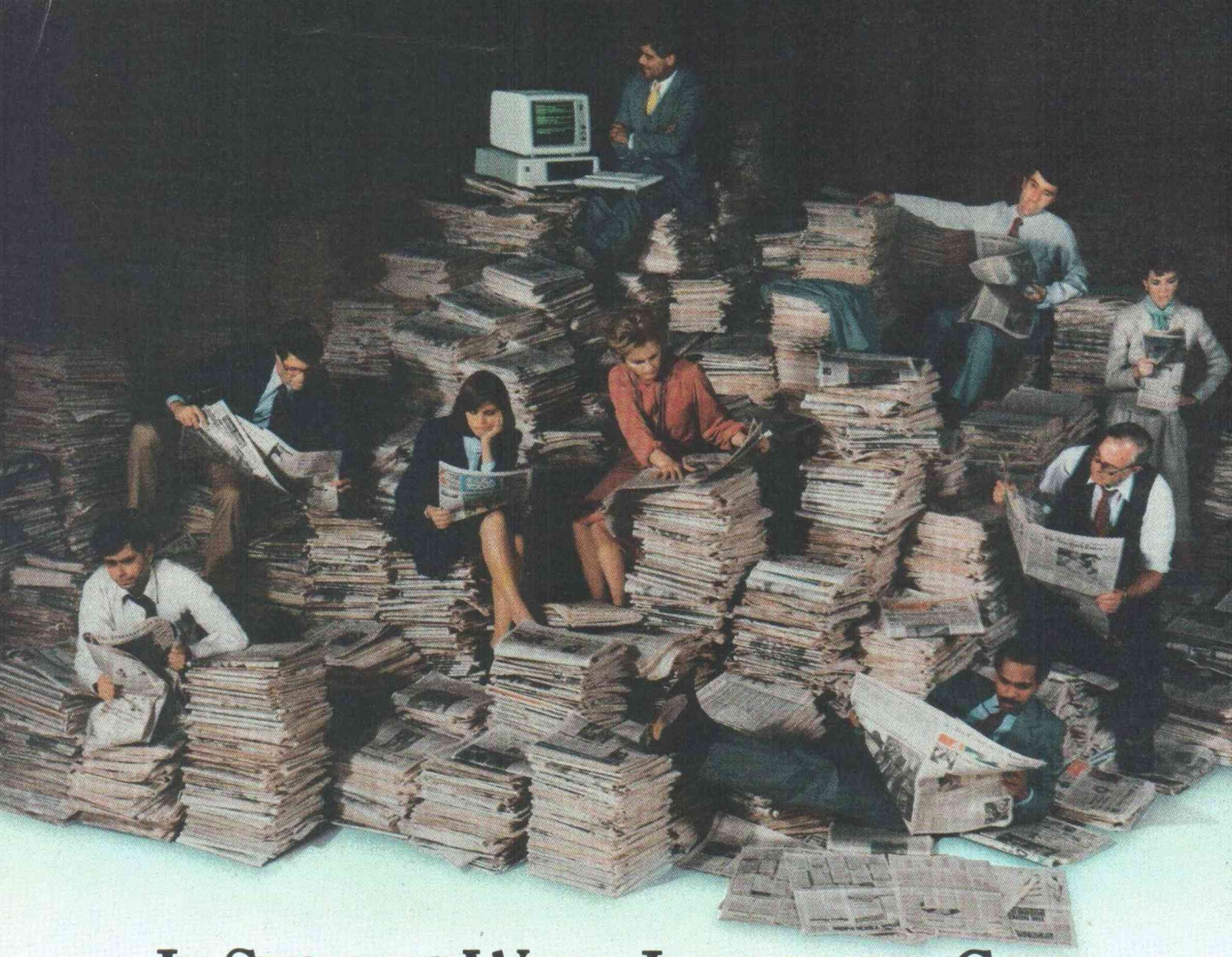
WHAT YOU SEE AND WHAT YOU GET 27
By J. R. Wilson

A FRIEND INDEED 28
By J. R. Wilson

ORDER OF SORTS 52
By Carl Oppedahl

DEPARTMENTS

ROM WITH A VIEW 5
GIGO 7
TELCOM 8
NEW PRODUCTS 23
WIRE 41
AD INDEX 69



IF STAYING WELL INFORMED CAN KEEP YOU WELL AHEAD, COMPUSERVE'S GOT BIG NEWS FOR YOU.

Introducing the Executive News Service and state of the art access to all the news you need.

CompuServe's exclusive Executive News Service is an electronic clipping service that puts the power and scope of the entire Associated Press news wire at your fingertips. Simply enter words or phrases that interest you ... from business to politics to hometown news. The Executive News Service then screens all state and national AP wires around the clock and files selected stories for reading at your convenience.

Then there's USA TODAY Update, with late breaking business information available for quick analysis by busy executives. USA TODAY's editors monitor hundreds of national and international news sources to bring you the latest, most important developments. General news reports are updated hourly. Reports for specific industries are provided daily in a concise, executive summary format.

Or access The Washington Post, with its fingers on the pulse of the national political scene. CompuServe delivers it all, plus a variety of other information, entertainment and communications options.

You can access CompuServe with almost any computer and modem, terminal or communicating word processor. To buy a Subscription Kit, see your nearest computer dealer. To receive our informative brochure, or to order direct, call **800-848-8199** (In Ohio, call 614-457-0802). Or send this coupon today.

Circle 10 on Reader Service Card

YES. Please send me your CompuServe Information Services brochure.

Name _____

Address _____

City _____

State _____ Zip _____

Business Phone _____

CompuServe®

Information Services
P.O. Box 20212, 5000 Arlington Centre Blvd.
Columbus, Ohio 43220
800-848-8199
In Ohio, call 614-457-0802 **ENS-1810**

An H&R Block Company

SIGEA

TELECOMMUTER™

INTEGRATED WORD PROCESSING AND COMMUNICATIONS SOFTWARE

For the Tandy 1000, 1200 and 2000, and IBM-PC/XT/AT and compatible computers. Uses all the Model 100/Tandy 200 TEXT and TELCOM commands.

WHY BUY JUST FILE TRANSFER? TURN YOUR DESKTOP COMPUTER INTO A 'SUPER MODEL 100/TANDY 200'!

For $200 you can put all this on your desktop computer:

- Full function Word Processor based on and compatible with Model 100/Tandy 200 TEXT Editor.
- Super Power Communications based on and compatible with Model 100/Tandy 200 TELCOM.
- Fast File Transfer between Model 100/Tandy 200 and desktop at 9600 baud. Fully prompted at every step so you'll never get lost. And we supply the cable at no extra cost!
- Host Mode for remote control of desktop computer from Model 100, Tandy 200, dumb terminal, or any computer with Telcom capability.

You don't have to put extra code on your Model 100 or Tandy 200 to transfer files — **no cassettes, no ROM cartridges. Telecommuter** will exchange files with any computer that has an RS-232 port and communications software, even another desktop computer.

Optional advanced features include XMODEM protocol file transfer, full VT100 terminal emulation, Telcom scripts and macros for automatic dialup and file transfer, DOS access from editor, and multiple access level Host Mode. **TC-Corporate** allows individual user assignments, such as password, access level and time limit; keeps activity log.

Telecommuter is a new and significantly easier way to use your portable and desktop computers together. Call or write today for more information on our entire line of fine software products.

We accept MasterCard and VISA for mail or telephone orders, and we ship free in the USA. Upgrade any time for price difference.

TC-standard or **TC-XMODEM** $200, **TC-DeLuxe** $300, **TC-plus** $400, and **TC-Corporate** $1000.

Look for Telecommuter at your local Radio Shack Computer Store!

SIGEA SYSTEMS, INC.

19 Pelham Road, Weston, MA 02193 (617) 647-1099

Circle 51 on Reader Service Card

portable 100/200

Editor
J.D. Hildebrand

Managing Editor
Edward M. Jackson

Senior Editor
Park M. Morrison

Technical Editor
Alan L. Zeichick

Production Director
Peter D. Koons

Art Director
Paige Garland Parker

Assistant Art Director
Elizabeth Maritato

Staff Artists
Kenneth Martin
Marjorie Strauss
Judith E.C. Webster

Advertising Director
David Hollis

Circulation Director
Nancy A. Wight

Circulation Manager
Loriel Peters

Subscriber Relations
Melissa R. Andrews
Mary W. Holmes

Business Manager
April A. Jenkins

MIS Director
Bonnie Hellevig

Publisher
James S. Povec

Associate Publisher
Carl Cramer

Editorial and Business Offices:
Camden Communications, Inc.
P.O. Box 250
Highland Mill
Camden, ME 04843
(207) 236-4365
CompuServe ID: 76703,372
Fax Tel. (207) 236-4738

PORTABLE 100/200 is published monthly by Camden Communications, Inc.: James S. Povec, president; Carl Cramer, vice president. Application for mailing at second class rates pending at Camden, ME and additional mailing offices. Postmaster: Address changes to Camden Communications, Inc., P.O. Box 250, Camden, ME 04843. Copyright 1985 by Camden Communications, Inc. All rights reserved. Portable 100/200 is an independent publication of Camden Communications, Inc. and is not affiliated in anyway with Tandy Corp./Radio Shack. TRS-80, Model 100, Tandy and Tandy 200 are trademarks of Tandy Corp./Radio Shack.

Contributors: Manuscripts and photographs are welcomed. Publisher assumes no responsibility for the return of unsolicited manuscripts, queries or artwork. Materials submitted for consideration should be accompanied by a self-addressed, stamped envelope.

Subscriptions are $32 for 12 issues. Users group subscription rates available. Please inquire for delivery rates outside the U.S. Dealer inquiries invited.

ISSN 0738-7016

TANDY'S COMMITMENT TO LAPTOP COMPUTING

A rule of thumb in the consumer electronics industry is that the clock starts ticking when you introduce a new product. You have 12 months to replace the new device with a more powerful, cost-effective unit.

You have even less time if the product is a microcomputer. Look at Apple, for instance, with its original Apple II replaced in succession by the II Plus, the Apple III, the Apple IIe and the Apple IIc.

You have less time still if you're building portable computers. Technology is advancing much faster than consumer demand, so you need to start designing a follow-up product or two even before you release your first brainchild. Gavilan Computer learned that lesson the hard way — the company kept changing its Mobile Computer to keep up with the latest technological breakthroughs. The result: Gavilan entered a perpetual redesign cycle and wound up never shipping any units out the door. Needless to say, the company went broke.

It was almost three years ago that Tandy Corp.'s Radio Shack division introduced the TRS-80 Model 100. It wasn't revolutionary, but just a logical successor to the Epson HX-20 as the low-end leader in the laptop computer market.

Logic tells us the 100 should have sold well for nine to 12 months, then been gradually phased out as consumers voted with their checkbooks for more advanced computers from Tandy or other vendors.

No one could have foreseen that the Model 100 would continue to sell briskly almost three years later,in the last days of 1985.

The credit is due to users and a small band of entrepreneurial software and add-on suppliers who have extended the Model 100's power far beyond anything Tandy could have predicted. Innovative, powerful products have led the 100 into markets and applications closed to computers many times larger and more powerful.

Now Tandy is joining the crowd, introducing its most significant Model 100 add-ons since the ill-received Disk/Video Interface. The company's $200 Portable Disk Drive gives users a convenient, affordable alternative to unwieldy audiocassette storage. And Interactive Solutions, Tandy's first foray into the option ROM arena, is going to give Portable Computer Support Group and Traveling Software a run for their money in the multi-program ROM derby.

Tandy watchers, take note. These products are more important than their price points and performance specs. They represent convincing evidence to support Tandy's contention that it is committed to the laptop market in general, and to the 100 in particular.

At a time when most manufacturers would be phasing out a product, Tandy is seeking to breathe new life into the market. Those of us who've spent the past two and a half years working to extend the 100's usefulness can only welcome this move.

In support of Tandy's drive, Portable 100/200 will publish the bare bones of a full-function operating system in the January or February 1986 issue. The the present operating system, now supplied with the drive, has weaknesses that limit the drive's usefulness. (See our review in this issue.) Our goal is to remove these limitations through publication and distribution of public domain software. It's the least we could do.

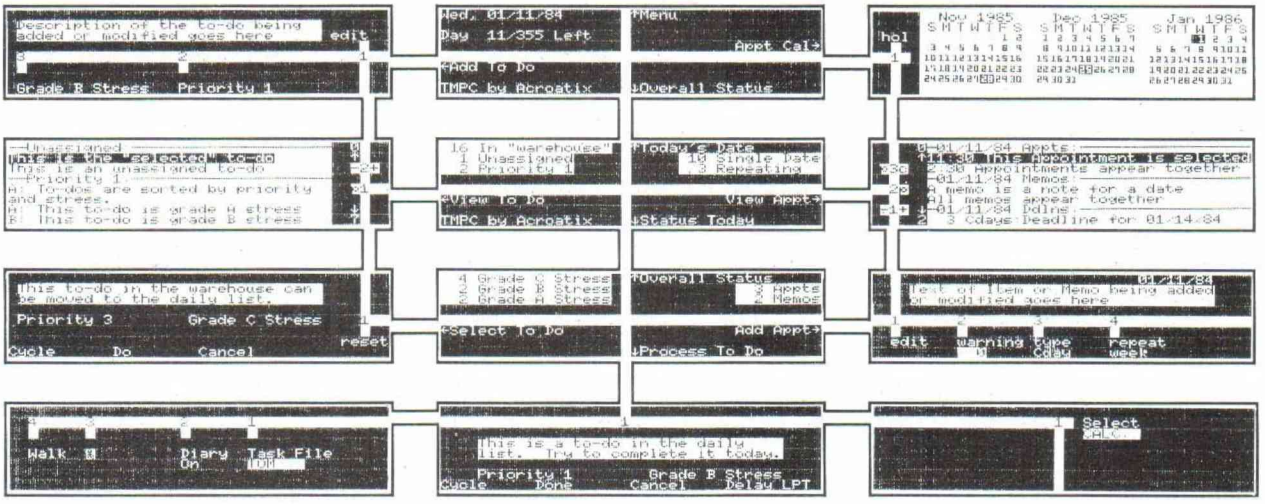
The Model 100 isn't the whole story, of course. We'll also develop a version of the operating system that will run on the Tandy 200.

We won't need to adapt the operating system for Radio Shack's newest portable, the Tandy 600. That product, introduced October 28, includes a 360K internal disk drive as standard equipment, along with a 300 bits per second (bps) modem, Microsoft software and a 16-line, 80-character screen. Contrary to most advance rumors, the $1,599 unit *doesn't* run MS-DOS. But you can read all the pertinent details in our review next month.

The Tandy 600 isn't an isolated phenomenon. Coupled with Tandy's ongoing support for the Model 100 and Tandy 200, it represents a substantial commitment to laptop computing. Tandy is the only company that's really analyzed what people do with portable computers before introducing products.

TMPC

A Plan for Efficiency



For the TRS-80 Model 100

More than a Calendar

TMPC helps you organize your day. It is more than a calendar program; it is a toolbox to help you keep your most urgent tasks at top priority.

Efficiency is no Game

When you use TMPC, you enter the system of screens and corridors shown above and access features by moving through the rooms with the arrow keys. The screens may resemble an adventure game, but TMPC is a serious tool. The user interface will become second nature to you, like walking through the rooms in your home.

Functions for Efficiency

Each screen has its own function. For example, one screen includes a perpetual calendar, and another shows a "warehouse" of tasks to be done. In other screens you can set entries that repeat weekly, monthly, quarterly or yearly; request a warning of up to 999 days for any entry; sort your to-do list by stress level and priority; and more.

Organization Philosophy

TMPC has more than just "features;" it has a *philosophy* of time management inspired by Stephanie Winston's best seller, *The Organized Executive*. You won't learn all there is to know about TMPC in five minutes, but after using it, you'll feel more *organized*, not just more computerized.

Spreading the Word

One user told us that he felt *guilty* to get so much functionality at so low a price. Find out for yourself. Order TMPC today.

TMPC by Ac′rō-ă′tix
$49.95 + $3.00 Shipping

For more information, including how to get a *Free Sample*, call or Write:

Acroatix Incorporated
P.O. Box 273
Wilmington, MA 01887
(617) 658-5550

Phone orders only call

(800) 225-5800

VISA MasterCard

COD or Courier shipment available at extra charge.

Circle 2 on Reader Service Card

BATTERY LIFE — IRRELEVANT?

Your reviews of the Portable Computer Support Group's (PCSG) 64K module contain misconceptions that, as designers and manufacturers of the module, we want to correct.

The PCSG module's nickel cadium batteries are designed to automatically recharge just like the nickel cadium battery in the Model 100 itself. There are no replacement instructions for the module's battery, any more than there are instructions to desolder the Model 100's internal battery in its operation manual. The rechargeable battery in our module, as the battery in the computer, was not designed as an item requiring replacement. Comparisons concerning battery life are irrelevent; once the computer is turned on, the battery recharges. The design goal was to retain memory for longer than the computer does and that goal was met.

Gary H. Kakert
Vice President
Cryptonics, Inc.

Battery life is normally irrelevent. However, if the computer is powered down for a period of weeks or months data loss may result. Cassette or disk backup is recommended if a computer won't be used for an extended period.
— Ed.

CANADIAN USER GROUP FORMING

A model 100 user group is being set up in Edmonton. For more information write Erik Ellehoj, Department of Geography, University of Alberta, Edmonton, Canada T6H-2H4.

MORE ON OUR ADVERTISING BROUHAHA

In our August issue, we ran an editorial on the advertising practices of this magazine and those of some of our advertisers. Quite simply, it raised some hackles. In an effort to assuage those readers who think we're bordering on the criminal by running advertisements for products before they're available, we offer the following:

First, we do not knowingly run ads for companies that do not have and do not intend to have a product. We do and will continue, however, to act in good faith as we expect our advertisers to do. We won't tell them how to run their business and don't expect them to tell us how to run ours.

Second, we are not and do not claim to be a watchdog agency. We'll leave that up to organizations such as the Better Business Bureau. We would suggest therefore, if you are going to buy a product from a company with whom you are unfamiliar, especially through the mail, check them out first.

Lastly, we encourage our readers to write and tell us of companies with whom they've encountered problems. By that we mean either lack of communication or an obvious runaround. We will publish any pertinent letters in this column with responses from the advertiser. — Ed.

I read with interest your August editorial. As a disappointed attempted purchaser of several items from vendors, I find your action reprehensible and will from this point on presume all your advertisers to be liars by virtue of having sought publication by a publisher who totally lacks ethics.

This is an affront to your vendors who value their reputations and take pains to provide what they promise.

Raising capital for business projects on the open market is a practice governed by law in this country and as such

(continued on page 42)

WHERE DO WE GO FROM HERE?

A new way to go to CompuServe's Model 100 Special Interest Group (SIG): *go m100sig*. Isn't that an improvement over the cryptic *go pcs-154*? That referred to Personal Computing Service Number 154, by the way.

CompuServe is cleaning up its act for many of its on-line services. Electronic mail can be accessed by typing *go easy* at any exclamation-mark prompt (!). Most other SIGs have the new, simplified addresses. Currently, the old section-page system still works, but there's no guarantee on how long CompuServe will recognize *go pcs-21* in place of *go trs80pro* for the TRS-80 Professional Forum.

This new system makes browsing through CompuServe's vast number of service easier — and faster. Before, finding a service frequently required a stop at the on-line index (*go index*) — now, a guess is often as good as a name.

Why browse through CompuServe? True, the Model 100 SIG and EasyPlex electronic mail are all many readers need. But there are scores of exciting services, games and SIGs available — 332 at last count.

COMPUTING POWER

Computer-specific SIGs abound. COCO is the address of the forum for TRS-80 Color Computer owners, and IBMNOVICE and IBMSIG support owners of the venerable IBM PC and close compatibles. And the Kaypro user's forum can be reached by typing *go kaypro*.

Other SIGs are software-specific, and are sponsored by software vendors. Examples are LOTUS by Lotus Development Corp., MSOFT by MicroSoft and BORLAND by Borland International. If you're a programmer, check out the programmer's forum, PROGSIG. Also look into PCS-55 (the Pascal Forum) and DRFORUM, the Digital Research Forum. And, don't forget the computer art group, ARTSIG. To get a menu of all computer-related SIGs, type *go computers*.

PLENTY OF VARIETY

Simply because CompuServe is a large computer system, don't think that computing is the only topic discussed. How about the political forum, HOM-41? Science and math education on SCIENCE? Or the religious HOM-33?

Travel services are a natural for CompuServe. PANAM leads to the Pam Am Travel Guide, and the Travel Sig is HOM-157. West coast travel information can be accessed by *go westcoast*, and Sun and Sand Vacations lurk behind the command *go sas*. Don't forget the Official Airline Guide, OAG.

Are computer games your pleasure? CompuServe has a few:

- Blackjack (GAM-60)
- Dor Sageth (GAM-527)
- Football (GAM-27)
- Golf (GAM-21)
- Hangman (GAM-23)
- Lunar Lander (GAM-24)
- Megawars (MEGA1 through MEGA3)
- New Adventure (GAM-50)

For a list of games, *go gam-1*.

DOWN TO BUSINESS

Most CompuServe forums are more serious. Various financial services are linked to the single address BANKING. There's a computerized checkbook balance at HOM-26. Market highlights are provided at MMM-46, and Standard and Poor's listings are at the obvious address S&P.

The federal government maintains services at various CompuServe addresses. Information from the Internal Revenue Service can be read with *go irs*. Military veterans' services are at VET, and the FBI Ten Most Wanted List is at TEN. Department of State international travel advisories can be checked with *go state*.

Aviators can find many support services from CompuServe, including aircraft insurance (AVL), rules and regulations (AVR), safety information (ASI) and up-to-the-minute weather (AWX).

NEED HELP?

It's easier to use CompuServe support services under the new system: no need to memorize those CIS page numbers.

Changing your password is as easy as typing *go password*. Terminal type is specified by TERMINAL, billing information is at BILLING, and a list of access telephone numbers is at PHONES.

As mentioned earlier, hundreds of services exist on CompuServe, from SIGs to daily newspapers to electronic banking. One useful time-saver is more of a challenge under the new addressing scheme: kids will now have to type *go encyclopedia* for that invaluable resource.

Finally, here's how to get the complete list of CompuServe addresses: select option two after typing *go index*. It's wise to echo the list to the printer; it's longer than 10K, and it's handier in printed form.

STATIC IN THE LINE

The higher-speed 1200 bit per second (bps) modems are becoming less expensive and more desirable to portable-computer owners. Even though many on-line services, including CompuServe, charge slightly more for a 1200 bps line, it's still less expensive — and much faster.

Many phone lines, however, aren't quite clean enough for high-speed telecommunications, and the error rate for 1200 bps is higher than for the built-in 300-bps modem.

If foreign-language characters creep in during a 1200-bps terminal session, try disconnecting and dialing up using the 300-bps modem. The session will seem interminably slow — but when downloading program information, accuracy is everything. And, remember the story of the hare and the tortoise. □

We've done it again!!!

More super software for your Model 100, Tandy 200 & NEC PC8201A!

MEN-U-TILITY

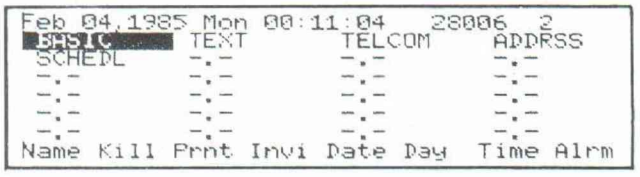
Men-u-tility is a powerful new utility for your Model 100. Once installed it is completely automatic and comes up when ever you would normally return to the main menu. As you move the cursor bar over the files, the length of each file is instantly displayed in the upper right corner. Men-u-tility adds 8 function keys to your main menu. You can kill files, rename files, make files invisible, set the day, date and time without ever leaving the menu.

Men-u-tility is also a print formatter. With F3, you can print any .DO file to your printer and you decide the right and left margins, top and bottom margins and page length! F8 sets an alarm that will go off no matter what mode you are in, BASIC, TEXT, TELCOM. etc.

If you have the Disk Video Interface (not required), the menu will appear on whatever screen you are using.

Men-u-tility only requires 1.8K of RAM and won't conflict with your other machine language programs.(100)

$24.95

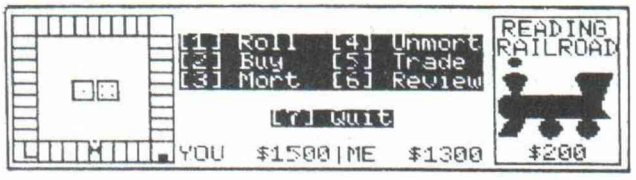


LET'S PLAY MONOPOLY*

It's you against the computer and the computer is a tough competitor. The computer makes all its own decisions. Super fast machine language graphics display the whole board at all times. You can tell at a glance who owns what property and the number of houses on each. It never takes more than 1 or 2 seconds for the computer to decide what to do. The computer is such a good player that you'll be lucky if you even win half of the time. (100,200,NEC)

*Monopoly is a trademark of Parker Brothers.

$29.95



ASSEMBLER

Our assembler is the answer to your assembly language programming needs. It has all the features you expect in an assembler and more! It requires less than 3K of your valuable RAM space and is relocatable to any convenient place in memory. There are several useful macros already built in. You can output all or any portion of the assembled listing to your screen or printer. An extensive 56 page manual covers the use of the assembler, the complete 8085 instruction set, useful sample programs and LOTS of information on the ROM and reserved RAM areas. (100,200,NEC)

$32.95

Melody Maker

Melody Maker is a musical program generator. Simple cursor controls are used to select a note and position it on the staff making it easy to enter in sheet music. You can even use Melody Maker to add musical routines to your own programs. (100,200,NEC)

$19.95

BYTEFYTER

Now you can expand the memory capacity of your portable computer by reducing the size of the programs that you store in it. Bytefyter is a 100% machine language program that does just that. It is relocatable so that it won't conflict with any other machine language programs that you use now, or may use in the future.

Bytefyter works on your BASIC programs just as they are, IN PLACE. It strips unneeded spaces and remark lines. But that's not all! Bytefyter is smart! Bytefyter combines the lines of the BASIC program to whatever maximum length you specify. Each line of a BASIC program takes 5 bytes just for the line number and pointer information. By combining lines, Bytefyter saves a tremendous amount of space, space that could be used for another program or text file. Bytefyter actually checks the logic of your programs and doesn't combine lines that would cause the program to crash.

Bytefyter is amazingly fast. It will do its job on even the largest BASIC program in just seconds You'll want to use Bytefyter on all your BASIC programs, whether you wrote them or bought them. (100,200,NEC)

$24.95

RENUMBER

Renumber is a machine language program that lets you renumber the lines of your BASIC programs IN PLACE! Renumber adjusts all references to line numbers throughout the program. It is completely relocatable so it won't conflict with your other machine language programs.

Renumber is FAST! It will renumber even the largest BASIC program in just seconds. You can renumber all or just part of a program. You decide the starting line number and the increment to use. It couldn't be any simpler. This is one utility that the serious BASIC programmer just can't afford to be without! (100,200)

$24.95

CBUG

CBUG is the ultimate debugging tool for your lap computer. It only requires 3K of your precious RAM space and is relocatable to any convenient place in memory. CBUG is not just fast, small and easy to use, it is POWERFUL!! With CBUG you can step through an assembly language program or the ROM while it displays the registers, the status of the flags, and associated memory locations. You can set breakpoints and excecute your code to that point. You can step through call instructions with a single keystroke and return to the point after the call. CBUG does number base conversion, hex addition and subtraction, search and display, search and replace and block moves of memory. CBUG allows you to alter the values contained in the registers, display memory and loadvalues into memory like a monitor program. (100,200,NEC)

$29.95

SORT

Our Sort utility lets you sort any TEXT file in place. You can sort the file by any field. Sort is 100% machine language and only requires .8K of RAM. (100,200,NEC)

$19.95

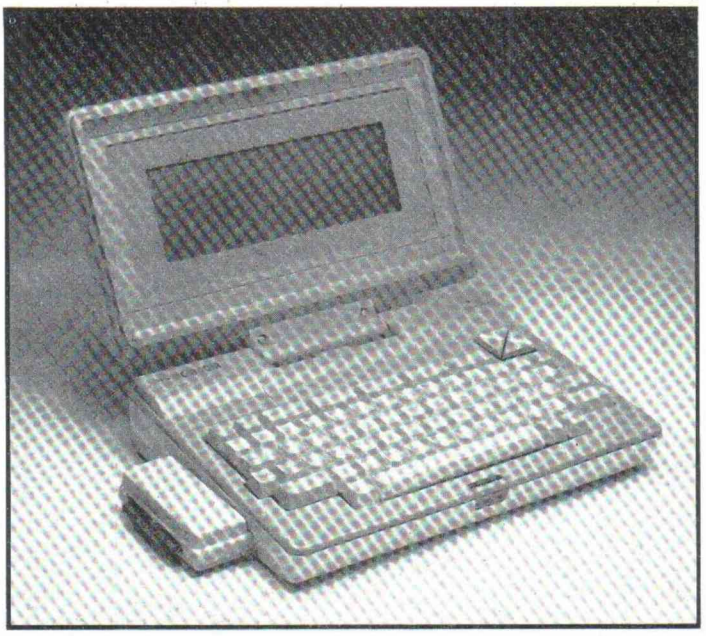
CUSTOM SOFTWARE

1308 WESTERN ● WELLINGTON, KS 67152

316-326-6197

VISA MasterCard

Please include $1.00 per program for postage.
Be sure to specify Model 100, Tandy 200 or NEC PC-8201A.
For orders outside the U.S., include sufficient postage for airmail delivery. U.S. funds only.



SIDESTAR

FOR THE NEC STARLET

The SideStar is a wallet-sized 128K RAM disk that gives the NEC Starlet more than just more memory, it adds new abilities to a great machine.

RUN THE POWERFUL SOFTWARE THAT REQUIRES MORE MEMORY

DBASE II and many of the powerful CP/M software packages require 64K mode and a disk drive which greatly reduces speed and portability. Supported by the Starlet's built-in ROM based CP/M operating system, the SideStar operates just like a disk and provides up to 100 times faster file access. Formated like a disk, a directory is created for 124 files and 124K of program and data storage. Free space is dynamically allocated in 1K blocks, so any file can be as large as needed, up to 124K. You need not give up portability to run large disk-based software.

EXPANSION CONNECTOR ADDS FLEXIBILITY

NEC Home Electronics participated in the development of the SideStar, including the specification of a bus connector which allows an additional cartridge (such as the NEC Disk/Video interface) to be plugged in behind the unit. This multi-cartridge configuration means that files can be loaded and saved efficiently and directly between the small, portable SideStar and the large, bulkier micro floppy disk unit.

FORGET ABOUT BATTERIES

A 1.2 Amp Lithium battery sealed inside powers the Sidestar up to seven years, into the next decade! You will not have to worry about batteries.

IS IT DISK—OR—IS IT RAM?

Think of the SideStar as a diskette. It's a self-contained, mass-storage device that requires no outside energy source. It can be used for transporting information between machines, long term storage and temporary storage. Unlike a diskette, it doesn't require a disk drive, power supply or cables, and it's very, very FAST! To the Starlet it is a disk.

A NO RISK OFFER

You can buy the SideStar for a 30-day evaluation. If you are not completely satisfied, return it within 30 days for a full and prompt refund. You get a two year warranty on parts and labor. If your SideStar should ever need service, we will fix or replace it within 72 hours.

PRICE: $399

IT'S EASY TO ORDER BY PHONE—JUST CALL

1 (800) 732-5012 TOLL FREE

Orders only (8am.-5pm. PST)

In Calif. ***(805) 987-4788***

For orders or customer service

FREE SHIPPING, HANDLING AND INSURANCE for Cont. USA. Ordered today—shipped tomorrow UPS. VISA, M/C, AmEx are welcome. Allow three weeks for checks to clear. Institutions & Corporations call for purchase order approval. California residents add 6% sales tax.

Price subject to change without notice. *DBASE II is a trademark of Ashton Tate.

PURPLE COMPUTING

420 Constitution Ave., Camarillo, CA 93010

Circle 45 on Reader Service Card

That Compounding Interest

With interest rates rising and falling like the tide, its important to have a good understanding of their effects on investments. Your Model 100 can help you do just that.

Reprinted from "Financial Decision Making With Your TRS-80 Model 100 Including 18 Programs" by Leslie Sparks (Book No. 1799), with permission of the publisher, TAB BOOKS Inc., Blue Ridge Summit, PA 17214.

The relationship between time and money is fundamental to financial decision making. You must understand this relationship in order to understand the economic consequences of your financial decisions; correct financial decisions are not possible without it. Once you do understand the relationship between time and money, you can analyze all kinds of financial situations, including insurance, retirement, loans, acquisitions of equipment and real estate and almost every other financial situation you are likely to encounter.

When you have a dollar, you can either spend it or you can invest it with the idea of spending it later. If you invest it, you are giving up the immediate purchase of goods and services. In order to justify this sacrifice, you expect to earn a profit on the investment. That is, you expect to get your dollar back plus a little extra to make up for the loss of the goods and services you could have purchased now. This profit is commonly called *interest,* and it is interest that makes people give up the immediate use of their money in hope of future gain.

The *time value of money* is important when you want to borrow or loan money. We will look at both situations and provide programs for the Model 100 that will carry out all the calculations necessary to make rational financial decisions.

COMPOUND INTEREST

There are two kinds of interest, *simple* and *compound.* With simple interest only the initial amount invested earns interest. If we invest $100 at 10 percent per year simple interest, we earn 10$ annually. At the end of one year we have $110, at the end of two years we have $120, and so on.

With compound interest, *both* the interest *and* the initial investment earn interest. For example, if we invest $100 at 10 percent compounded annually, we earn $10 the first year (10 percent of $100). In the second year we earn interest on $110, or $11, in the third year we earn interest on $121 (or $12.10), and so on to the end of the investment period.

As you can see, your money grows much faster with compound interest than with simple interest. The math necessary to determine the results of compound interest is more difficult than that for simple interest — but not *that* much more difficult. With a computer the difference in difficulty really doesn't matter.

The formula for calculating the results of compound interest can be derived fairly easily. Because the entire concept of time value of money depends on understanding compound interest calculations, we will work out the equation one step at a time.

Suppose you want to invest $1,000 at 10 percent interest per year compounded annually. You plan to leave the money for five years and want to know how much money you will have at the end of that time. We will work with the problem one year at a time, but first let's define some terms:

- PV (present value) = the value of your investment now ($1,000)
- FV (future value) = the value of your investment at some future time
- r = the interest rate expressed as a decimal (0.1 in our example)
- n = the number of compounding periods (in this case, 5 years)

The future value of our $1,000 at the end of the first year is given by:

$$\begin{aligned} FV1 &= PV + PV \times r \\ &= PV(1+r) \\ &= 1{,}000 \times 1.1 \\ &= 1{,}100 \end{aligned}$$

For the second year we calculate using FV1:

$$FV2 = FV1 + FV1 \times r = FV1(1+r)$$

But $FV1 = PV(1+r)$, so we can substitute that expression for FV1:

$$FV2 = PV(1+r)(1+r)$$

The third year we again substitute using $PV(1+r)$:

$$FV3 = FV2(1+r) = PV(1+r(1+r)(1+r)$$

We can now generalize the formula as:

$$FVn = PV(1+r)^n$$

We can use this formula to answer our question.

$$FV5 = 1{,}000(1.1)^5 = \$1{,}610.51$$

If we had invested at simple interest, we would have earned only $1,500.

It should be clear that we can solve the equation for any one variable if we know all the others. For example, the present value of a future amount is given by:

$$PV = FV(1+r)^{-n}$$

The present value formula is important because it tells us how much a given future value is worth today. In other words, the present value tells us how much we should be willing to pay now for the right to receive a given future amount.

We have been assuming that the compounding period was one year. The compounding period, however, can be any time period — daily, weekly, monthly, quarterly and so on. The interest rate is generally stated as a percentage per year. To use the formula above we both divide the yearly interest rate and multiply the number of years by the number of compounding periods per year. The formula thus becomes:

$$PV = FV(1+r/q)^{-nq}$$

where q is the number of compounding periods per year.

For example, if we were offered 10 percent interest per year compounded monthly, we divide 0.1 by 12 to get the interest rate per compounding period, and multiply 3 years by 12 to get the total number of compounding periods. (Note that the programs in this book require only that you enter the yearly interest rate and the number of compound-

SUBSCRIBE NOW!
800
225-5800
800
225-5800
800
225-5800
SUBSCRIBE NOW!
800
225-5800
800
225-5800

TIME AND MONEY

Compound interest program COMPND.BA

```
1 REM COMPOUND INTEREST PROGRAM
2 REM VERSION 1.0 BY LES FOR MODEL 100
3 REM 9/83
4 REM FOR TAB BOOKS
5 CLEAR
6 DEFINT J,L
11 A$="1234567890.+-"
12 AZ$=CHR$(13)+CHR$(31)+CHR$(30)+CHR$(42)+"M
    "+"m"
14 DIM F$(4),T$(5),X(5)
15 JR=16:
   JS=2:
   FORJ=0TO4:
   READF$(J):
   NEXTJ
16 FORJ=0TO4:
   READT$(J):
   NEXTJ
20 REM FOR TRS-80 MODEL 100 BY LES
40 J=1
45 NT=4
50 CLS:
   JF=0
60 PRINT STRING$(39,"=")
70 PRINT"COMPOUND INTEREST PROGRAM
72 PRINT "   version 1.0 by LES."
80 PRINT
85 :
   PRINTSTRING$(39,"=")
550 GOSUB 9000
560 REM FIND MISSING ITEM
570 J9=0
572 FORJ=0TONT:
   IFX(J)=0THEN J9=J9+1
574 NEXTJ
576 IFJ9>1THENCLS:
   PRINT" ERROR. TOO MANY UNKNOWNS.":
   FORJ=0TO500:
   NEXTJ:
   GOTO550
578 J=0
580 IFX(J)=0THEN600ELSEJ=J+1
590 IFJ>NTTHENCLS:
   PRINT"YOU SPECIFIED EVERYTHING. ERROR.":
   FORJ=1TO400:
   NEXTJ:
   GOTO550
595 GOTO 580
600 JS=J+2:
    LC=0:
    ONJGOTO630,640,660,680
605 PRINT@280," FINDING INTEREST RATE.";
610 C=X(4)/X(3):
   K=1/(X(1)*X(2)):
   R=C^K-1
620 R=R*100*X(2)
```

```
628 X(0)=INT(1000*R)/1000:
   GOTO550
630 PRINT@280,"CALCLATING NO. OF YRS.";:
   R=X(0)/100/X(2):
   R1=1+R:
   V=X(4)/X(3)
632 X(1)=LOG(V)/LOG(R1)/X(2)
638 GOTO 550
640 PRINT@280,"FINDING NR. OF PERIODS/YR";:
   LC=0:
   N=1:

641 V=X(4)/X(3):
   NL=1:
   NB=2000
642 R=X(0)/100/N:
   R1=1+R
643 XN=LOG(V)/LOG(R1)/X(1)
644 IFXN>2000THEN652
645 IF ABS(XN-N)/N<.000001THEN650
647 IFXN>NTHENNL=NELSENB=XN
648 N=(NL+NB)/2:
   LC=LC+1:
   IFLC>66THEN655ELSE642
650 IF XN<1THEN 657 ELSE X(2)=INT(XN+.5):
   GOTO550LIST657
652 CLS:
   PRINT  ERROR ERROR >>>":
   PRINT"NOT POSSIBLE TO GET ANSWER.":
   PRINT"TRY NEW DATA.":
   PRINT:
   FORJ=0TO500:
   NEXTJ:
   GOTO550
655 CLS:
   PRINT"ERROR. ERROR."
656 PRINT "DID NOT CONVERGE. TRY NEW INPUT.":
   FORJ=0TO500:
   NEXTJ:
   GOTO550
657 CLS:
   PRINT"ERROR ERROR.":
   PRINT"LESS THAN ONE PAYMENT/YR.":
   FORJ=0TO700:
   NEXTJ:
   GOTO550
660 PRINT@280,"CALCULATING PRESENT VALUE.";:
   R=X(0)/100/X(2)
665 X(3)=X(4)*(1+R)^-(X(2)*X(1))
670 GOTO 550
680 PRINT@280,"CALCULATING FUTURE VALUE.";:
   R=X(0)/100/X(2)
690 X(4)=X(3)*(1+R)^(X(2)*X(1))
695 GOTO 550
9000 REM DATA INPUT
9001 REM (C) 1983 L.E. SPARKS
9002 REM MAY BE FREELY USED
9010 CLS
9015 PRINT "COMPOUND INTEREST PROGRAM.
9020 PRINT STRING$(39,"=")
```


SPELLER 2

Improved Performance, corrects spelling and typographical errors of "Text Do" files.

$50.00

■

D SPELLER

Easy to use spelling checker for use with disk operating system. Large vocabulary capacity. Learns new words. Comes with a 1,000+ word dictionary for loading to disk or on a 5¼" disk.

$95.00

■

PSYCHI

A fun-to-use expert system which makes a psychiatric diagnosis.

$75.00

■

METAB

Calculates metabolic rates, caloric intake and changes in weight.

$24.00

All programs come on 5¼" disk or cassettes with documentation.

SOFTMATE

P.O. Box 15157
Portland, OR 97215-9998

503-238-1490

Circle 52 on Reader Service Card

```
9040 FOR J=0TONT
9050   PRINTTAB(2) T$(J);TAB(21);:
   PRINTUSINGF$(J);X(J)
9060 NEXT J
9065 IF JQ=-9THEN9800
9070 PRINT @(JS*40)+JR,"->";
9075 PRINT@280,"ARROWS MOVE ->, * CALCULATES
     M RETURNS";
9080 Y$=INKEY$:
   IFY$=""THEN 9080
9090 IFINSTR(A$,Y$)<>0 THEN 9500
9095 IF Y$="M"ORY$="m"THEN JF=-9:
   RETURN
9100 JZ=INSTR(AZ$,Y$):
   IFJZ=0THEN9080
9110 ON JZ GOTO 9120,9120,9140,9250
9120 PRINT@(JS*40)+JR,"   ";
9122 JS=JS+1:
   IFJS>NT+2THEN JS=2
9124 PRINT@(JS*40)+JR,"->";
9130 GOTO 9080
9140 PRINT@(40*JS)+JR,"   ";
9150 JS =JS-1:
   IFJS<2 THEN JS=NT+2
9152 PRINT@(40*JS)+JR,"->";:
   GOTO9080
9250 RETURN
9500 PRINT @(40*JS)+JR,"        ";
9505 PRINT@280,"ENTER REST OF DATA PRESSENTER
     WHEN DONE";
9510 V$=Y$
9530 PRINT@(40*JS)+18,V$;CHR$(95);" ";
9540 Y$=INKEY$:
   IF Y$ =""THEN 9540
9550 IF Y$=CHR$(13) THEN 9700
9560 IF Y$<>CHR$(29) THEN 9600
9570 IF LEN (V$)=0 THEN 9530
9580 V$=LEFT$(V$,LEN(V$)-1):

9590 Y$="":
   GOTO 9530
9600 IF INSTR(A$,Y$)=0 THEN 9530
9610 V$ = V$ + Y$
9620 GOTO 9530
9700 X(JS-2)=VAL(V$)
9710 JS=JS+1:
   IFJS>NT+2THENJS=2
9720 GOTO 9010
9800 JQ=0:
   PRINT@280,"PRESS * FOR PAY SCH, A FOR ANO
     THER";
9810 Y$=INKEY$:
   IFY$=""THEN9810
9815 IFY$="*"THEN9830ELSEIFY$="A"THEN90
34000 DATA ##.###%,##.##,###,"$$##,#######.##
     ","$$###,######.##"
35000 DATA INTEREST,NUMBER YRS,NOPERIOD/YR,PR
     ESVALUE,FUTVAL,END
```

ing periods per year. The computer does all the calculating for you.)

PROGRAM COMPND.BA

The Model 100 program COMPND .BA does all the calculations to solve compound interest problems. It is easy to use and quickly calculates the answer. To use the program you simply enter the variables you know and let the program calculate the missing one. If you enter too many variables, the program will tell you so, and if you enter too few it will also tell you. Tell the program that you want it to start calculating by pressing the * key.

The following variables are present in compound interest problems:

- The present value (the value today)
- The yearly interest rate
- The number of compounding periods per year
- The number of years
- The future value (the value at a given future time)

The program can calculate any of the variables, provided all the others are known.

Figure 1: Beginning screen for compound interest program

```
      COMPOUND INTEREST PROGRAM.
====================================
 INTEREST        ->  0.000%
 NUMBER YRS          0.00
 NOPERIOD/YR         0
 PRESVALUE           $0.00
 FUTVAL              $0.00
ARROWS MOVE -> * CALCULATES M RETURNS
```

The beginning screen for the program is shown in Figure 1. To enter data simply enter the numbers and press ENTER. The screen will display all the data you entered and the cursor will move to the next line. You can enter data for any line by moving the cursor up or down using arrow keys.

Enter zero for the variable you wish to calculate. The program requires that one, and only one, of the variables be equal to zero. When you have entered all the data, press * to start the calculations. If none or all of the calculations are equal to zero, the program prints an error message and returns you to the data entry form.

So now you've got it if you need it. Next time you do battle with a bank, go in prepared and knowing what to expect. □

Please help us rate this article's value. If you've found it very valuable, circle 164 on the Reader Service Card. If it was moderately valuable, circle 165—and if it wasn't valuable to you, circle 166.

Advertisement

Text processing power that no other program can equal.

WriteROM©

on Snap-in™ Cartridge $99.

NOW AVAILABLE ON M-200

PCSG says "Send it back in 30 days for a full refund if you don't agree."

WRITE ROM is the definitive word processing extension for the Model 100. PCSG produced the first text formatter for the Model 100, now sold by Radio Shack as Scripsit 100. Now, 18 months later, PSCG introduced WRITE ROM. Those who have experienced it say WRITE ROM literally doubles the power of the Model 100.

WRITE ROM — as its name implies — is on a snap-in ROM. You simply open the little compartment on the back of the Model 100 with a quarter and press WRITE ROM in. It's as easy as an Atari game cartridge. You can use other ROM programs like Lucid whenever you wish.

WRITE ROM lets you do every formatting function you'd expect, like setting margins, centering, right justifying and creating headers and footers. But it does them under function key control.

WRITE ROM remembers your favorite format settings so you can print a document without any setup, but you can change any formatting or printing parameter instantly with a function key.

WRITE ROM's "pixel mapping" feature shows you an instant picture on the screen of how your printout will look on paper.

In all there are 64 separate features and functions you can do with WRITE ROM, and some of these features are truly breakthroughs for the Model 100.

First, WRITE ROM lets you do search and replace. Any word or phrase in a document can be searched for and replaced with any other phrase where the search words appear.

Second, WRITE ROM lets you send any text (formatted or not) to any other computer over the phone with just a function key. What's more, it dials and handles sign-on and sign-off protocol automatically.

Third, WRITE ROM has a wonderful feature called Library that lets you record favorite phrases, words or commonly used expressions (often called boilerplate).

Any place you wish Library text to appear you just type a code. WRITE ROM automatically inserts the text just like a Xerox Memory Writer. Picture what you can do with that kind of capability.

WRITE ROM is blindingly fast. No one can claim faster operation. Because it is on ROM it uses virtually none of your precious RAM. It works with any printer, serial or parallel. You can make a duplicate copy of a document file under a new filename. Rename or delete (kill) any RAM file with function key ease.

This description only scratches the surface of this amazingly powerful piece of software. Dot commands allow control of such things as margins, centering, line spacing and other changes in the middle of a document. Most are WordStar™ compatible.

A mailmerge feature allows you to send the same document to every name on your mailing list, personalized for each recipient.

WRITE ROM enables you to do underlining, boldface and correspondence mode as well as any other font feature like superscripts that your printer supports, in a way that many users say "is worth the price of the program."

To underline you don't have to remember a complicated printer code. You just type CODE u, and to stop underline, CODE u again. The CODE key is to the right of your spacebar. Boldface? CODE b to start and stop. Easy to remember and do. Five different printer features of your choice.

We couldn't list all the features here. For example, you can select not just double space but triple or any other. You can use your TAB key in a document. WRITE ROM allows you to undent. This means you can have paragraphs with a first line projecting to the left of the rest of the paragraph. WRITE ROM has a feature unique for any word processor on any computer. It's called FORM. FORM is an interactive mechanism that lets you create screen prompts so that you or someone else can answer them to fill out forms or questionnaires.

With FORM, any place that you had previously typed a GRAPH T and a prompt in a document, WRITE ROM will stop and show you that prompt on the screen. You can type in directly on the screen and when you press F8 you see the next prompt. It goes to a printer or a RAM file.

Think how you can use FORM. A doctor or nurse could use it for a patient's history with each question appearing on the screen. An insurance salesman could use it for his entire questionnaire. You could construct a series of prompts to answer correspondence, typing the answers, even using Library codes. This feature lets you answer letters in rapid-fire fashion, each with personalized or standard responses.

Before WRITE ROM you had to be a programmer to create a series of prompts. Now it's as simple as GRAPH T.

PSCG makes the claim that WRITE ROM is the easiest, fastest and most feature-rich formatter for the Model 100. We're happy to offer WRITE ROM because it expands the 100 to a dimension of text processing you cannot equal on even larger computers.

We brashly state that WRITE ROM is the best you can buy. But put that to the test. If you aren't as excited as we are, return it for a full refund. Priced at $99. on snap-in ROM. MasterCard, VISA, American Express and COD.

PORTABLE COMPUTER SUPPORT GROUP

1-214-351-0564

11035 Harry Hines Blvd. No. 207, Dallas, Tx. 75229

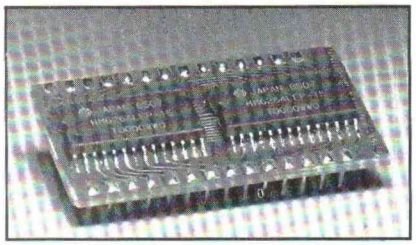
VISA / MASTER CARD / AM. EXP. / C.O.D.

Circle 34 on Reader Service Card.

DIAL 1 (800) 732-5012 TO ORDER

MORE MEMORY

FOR YOUR TANDY 200 OR MODEL 100



CALL FOR LATEST PRICE

TANDY 200
24K Expansion Modules only $99

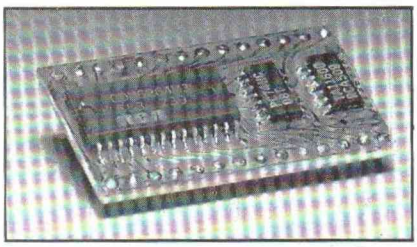
Expand your computer's memory in less than 5 minutes and save over $100 on each expansion module.

Take a dime and pop open the hatch, plug-in one or two of our 24K expansion modules, and increase your memory up to 72K.

Do you care about quality?

Whether you are writing a letter home or projecting the corporate sales—the reliability of your memory is paramount. Purple Computing's 24K modules are designed specifically for the TANDY 200 and use the highest quality components.

- Uses the lowest power and most reliable memory chips available.
- Pins are made specifically for the sockets used in the TANDY 200.



MODEL 100, NEC PC-8201A AND OLIVETTI M10
8K Expansion Modules $29

Three for $79 — Six for $149

Expand your computer's memory with our most popular product. Tens of thousands sold. Now you can save even more. You get the same high quality part and great service now at reduced prices.

- Easy to follow installation instructions included
- 30-day absolute satisfaction money back guarantee.
- Two-year replacement warranty.

Tandy 200 24K Expansion Modules (#T200R)

Model 100 8K Expansion Modules (#M1008K)

PC-8201A 8K Expansion Modules (#NEC8K)

Olivetti 8K Expansion Modules (#OM108K)

FREE SHIPPING, HANDLING, AND INSURANCE for Cont. USA. Ordered today—shipped tomorrow UPS. 30-day total satisfaction, money back guarantee. We honor Visa, M/C, AmExp, and Money Orders. Checks take three weeks to clear. California residents add 6% tax.

In a hurry?
Ask for UPS BLUE (2-day air) only $4/order or UPS RED (1-day air) only $12/order.

*TANDY 200 is a trademark of TANDY CORP.

It's Easy To Order By Phone
CALL TOLL FREE
(800) 732-5012
Orders only (8am.-5pm. PST)
(805) 987-4788
For orders in California and for Customer Service

VARs, OEMs, Corporate users call for quantity prices.

PURPLE COMPUTING
420 Constitution Ave., Camarillo, CA 93010

Circle 49 on Reader Service Card

A Super Input Routine

Customizing input screens has always been something of a chore. This helpful little subroutine takes tedium out and puts versatility in.

By Rick Rothstein

If you write programs for yourself or others, then you have probably run into the limitations of the various input modes available in BASIC. For example, have you ever wanted to display a "form" that allows more than a single input per line? If so, you became quickly, and painfully, aware of how easy it was to destroy your screen layout. If this, or other similar input related problems have ever plagued your programming efforts, read on.

Before buying my Model 100, I did all my programming on a TI-99/4A Texas Instruments home computer. What? Are those boos and hisses I hear? Well, they shouldn't be. The TI computer had an extremely powerful BASIC language available for it. And this BASIC contained some pretty remarkable commands.

One of these programming commands was called ACCEPT and performed as an extremely versatile extension of the INPUT command. With it, you were able to:

- accept data at any screen location;
- sound a tone to let the user know the program was ready to accept data;
- limit the *number* of characters that could be entered;
- limit the *type* of acceptable characters;
- provide default values for acceptance;
- provide full editing capabilities.

Now, if you're a Model 100 programmer you can have all the advantages of TI's ACCEPT command in your own programs. The following listing shows a BASIC language subroutine which simulates ACCEPT. Type it into your computer using TEXT. That way, when you want to include it in one of your programs, simply MERGE it in.

SELECT SCREEN LOCATION

As you are no doubt aware, the Model 100 display screen is laid out as a grid, 40 columns wide by eight rows deep. It's possible to display text to the screen beginning at any one of 320 print positions. These locations are numbered from zero to 319 starting in the upper left of the screen and progressing sequentially from left-to-right and top-to-bottom.

To begin printing text at a specific place on the screen, simply include the appropriate position numbers with the "@" symbol (Shift-2) in a print statement. For example, if you wanted to print the word HELLO beginning at the fifth column of the third row, you'd use: PRINT @84,"HELLO".

The ACCEPT subroutine uses the same numbering system coupled with a variable called AT. Hence, if you want to accept data at the fifth column of the third row, you'd need to set AT=84 prior to calling the subroutine.

If AT is set to a negative value, or a number greater than 319, the program will stop and display an error message. The AT variable must be set to the proper value before *each* call to the subroutine. If it is not reset, it uses the last defined value of AT.

ALERTING THE USER

If you wish to sound an audible alert to indicate the program is waiting for data, set the variable called ALERT to any non-zero number. The default is ALERT=0, which is sound off. Once set within a program, ALERT remains set for all subsequent calls to the subroutine.

If you'll *always* want the program to sound an alert, change the conditional test in line 60020 to a BEEP command. If you'll never want it, remove line 60020 altogether.

SET INPUT FIELD SIZE

This option allows you to limit the size of a data entry field. That is, you'll be able to set the maximum number of characters a user can enter. Before calling the subroutine, set the variable SIZE to that maximum number.

If no value is assigned to SIZE, data will be accepted up to, and including, the last character position on the input line. If SIZE is negative, the program will stop and display a subroutine error. If SIZE is set equal to zero, or is larger than the number of spaces left in the input row, then SIZE will be adjusted to accept characters to the end of the line. SIZE=0 is the default for *each* and *every* call to the subroutine.

MASK CHARACTERS

This is perhaps the nicest option available in this subroutine. You can determine *which* characters can be used.

USER NAME	VARIABLE NAME	DESCRIPTION
ALERT	AL	Determines whether to sound an alert to the user or not
AT	AT	Location for beginning of input field
SIZE	SI	Size of input field
	ZC	Subroutine column counter
	ZK	Reused three times within subroutine — as a flag to determine the first keystroke entered; as the ASCII equivalent of each keystroke; and as a loop counter when removing leading and trailing blank spaces
IN$	IN$	Contains the information inputted by the user
MASK$	MA$	A filter for inputted keystrokes
TEXT$	TE$	Working display string
	ZK$	Keystroke entered by the user

When writing your own programs, you should obviously not use variable names already taken by the subroutine. Here's a list of those variables.

The Portable Accountant

Accounting System

for the Model 100/200

- Allows More Time for Professional Services
- Improve Report Turnaround
- Speed Client Writeups
- Reduce Errors

The PORTABLE ACCOUNTANT provides a fully integrated accounting system for any small business featuring:

Cash Disbursements Journals
Cash Receipts Journals
General Journals
Detailed General Ledger
Trial Balance
Automated Backup
Automated Balance Forward

Mail to:
The Portable Accountant
FACS, Inc.
Box 2132, White Flint Mall,
Kensington, Maryland 20895
301-933-7092

☐ Enclosed is my check for $99.95.
My Model 100 is a:
☐ 8K ☐ 24K ☐ 32K

Signature _____

Ship to:

Name _____

Street _____

City/State/Zip _____

☐ Please charge $99.95 to my
☐ MasterCard ☐ VISA

Account # _____

Exp. Date _____

Circle 22 on Reader Service Card

ACCEPT

In effect, you create a mask allowing certain characters to be entered while rejecting others. Rejection is signaled by an audible warning.

To create the mask, simply set the string variable called MASK$ equal to the characters that will be permissable. For example, suppose you want only Y, N or ? (question mark) to be allowable answers to a question. You'd set MASK$ ="YN?".

If MASK$ equals a null string (i.e. MASK$="") then *all* keystrokes are accepted. This is the default condition for every call to the subroutine.

ESTABLISHING DEFAULT ENTRIES

There will be times when you'll want to suggest an answer in response to a question. For example, 1985 for the year. To do so, simply place the desired text into the string variable TEXT$ (i.e. TEXT$="1985"). Depending on the location defined by AT, that value will appear there by hitting the ENTER key. Any other keystroke will erase the displayed text and the program will accept data as entered.

DATA ENTRY

Unlike other input modes available on the Model 100, ACCEPT is quite easy to use. Data entry and editing emulate the TEXT/EDIT modes of the 100. The cursor is non-destructive, meaning it can move across characters without erasing them. Since ACCEPT is a single-line input routine, cursor movement is either right (right arrow or Ctrl-D) or left (left arrow or Ctrl-S).

If you place the cursor over existing text and begin typing, the new entry will be inserted without overwriting any data.

Ctrl-left arrow or Ctrl-Q moves the cursor to the beginning of the data field and, conversely, Ctrl-right arrow or Ctrl-R will put it at the end.

The backspace key deletes characters *in front* of the cursor, while shift-backspace deletes characters *under* the cursor. To erase an entire line, press the escape (ESC) key.

Additionally, you'll hear a beep if the number of characters entered exceeds the size of the data field.

HOW IT WORKS

One of the benefits of having this subroutine written in BASIC is that it can be modified to suit the programmer's needs. Responses to special keystrokes may be added or eliminated as desired. This is a distinct advantage over built-in BASIC statements.

Before you'll be able to modify this subroutine, however, it'll be necessary to know what each program line does. Note that variable names have been shortened in the listing (to two characters) to conserve memory.

- Line 59999: Ensures the program has a well defined ending point.
- Line 60000: Checks to see if SIZE and AT are within proper limits. If not, an error is displayed. If so, both are truncated to whole numbers, the break key is disabled and the screen is locked to prevent scrolling.
- Line 60010: If the number of character spaces left on the input line is less than SIZE, or SIZE=0, then the value of SIZE is adjusted to fill the remainder of the line.
- Line 60020: The column counter is set to one, and a second variable is set so that any default text is erased if enter key is not pressed. TEXT$ is adjusted to

The ACCEPT subroutine

```
59999 END
60000 IF SI<0 OR AT<0 OR AT>319 THEN PRINT ,,
      "** SUBROUTINE ERROR **",,
      :END ELSE AT=INT(AT)
      :SI=INT(SI)
      :POKE 63056,128
      :CALL 16959
60010 IF SI+AT MOD 40>40 OR SI=0 THEN SI=40-AT
      MOD 40
60020 ZC=1
      :ZK=0
      :TE$=LEFT$(TE$+SPACE$(40),SI)
      :PRINT @AT,TE$;
      :IF AL THEN BEEP
60030 PRINT @AT+ZC-1,CHR$(27);"P";
```

ACCEPT

```
6ØØ4Ø ZK$=INKEY$
      :IF ZK$="" THEN 6ØØ4Ø
6ØØ5Ø IF ZK=Ø AND ZK$<>CHR$(13) THEN PRINT
      CHR$(27);"Q";
      :TE$=SPACE$(SI)
      :PRINT @AT,TE$;
6ØØ6Ø ZK=ASC(ZK$)
      :IF NOT(ZK>31 AND ZK<>127 AND MA$="" OR
      INSTR(MA$,ZK$)>Ø) THEN 6ØØ8Ø ELSE IF
      RIGHT$(TE$,1)<>" " THEN SOUND 999,5
6ØØ7Ø TE$=LEFT$(LEFT$(TE$,ZC-1)+ZK$+MID$
      (TE$,ZC),SI)
      :PRINT CHR$(27);"Q";
      :PRINT @AT,TE$;
      :ZC=ZC-(ZC<SI)
      :GOTO 6ØØ3Ø
6ØØ8Ø IF ZC>-(ZK=8) AND ZK=8 OR ZK=127 THEN
      TE$=LEFT$(LEFT$(TE$,ZC-(ZK=127)-2)+MID$
      (TE$,ZC-(ZK=127))+" ",SI)
      :PRINT CHR$(27);"Q";
      :PRINT @AT,TE$;
      :ZC=ZC-(ZC>=1)*(ZK=8)
      :GOTO 6ØØ3Ø
6ØØ9Ø IF ZK=28 OR ZK=4 THEN ZC=ZC-(ZC<SI)
      :GOTO 6ØØ3Ø
6Ø1ØØ IF ZK=29 OR ZK=19 THEN ZC=ZC+(ZC>1)
      :GOTO 6ØØ3Ø ELSE PRINT CHR$(27);"Q";
6Ø11Ø IF ZK=17 OR ZK=18 THEN ZC=-(ZK=17)-SI*(ZK=18)
      :GOTO 6ØØ3Ø
6Ø12Ø IF ZK=27 THEN TE$=SPACE$(SI)
      :ZC=1
      :PRINT @AT,TE$;
      :GOTO 6ØØ3Ø
6Ø13Ø IF ZK=3 THEN CALL 16964
      :POKE 63Ø56,Ø
      :END
6Ø14Ø IF ZK<>13 THEN SOUND 9999,-5*(ZK<>8)
      :GOTO 6ØØ3Ø
6Ø15Ø ZK=SI+1
      :IF TE$=SPACE$(SI) THEN IN$=""
      :GOTO 6Ø18Ø
6Ø16Ø ZK=ZK-1
      :IF ZK>Ø AND MID$(TE$,ZK,1)=" " THEN 6Ø16Ø
      ELSE TE$=LEFT$(TE$,ZK)
      :ZK=Ø
6Ø17Ø ZK=ZK+1
      :IF ZK<SI AND MID$(TE$,ZK,1)=" " THEN 6Ø17Ø
      ELSE IN$=MID$(TE$,ZK)
6Ø18Ø SI=Ø
      :MA$=""
      :TE$=""
      :POKE 63Ø56,Ø
      :CALL 16964
      :RETURN
```


Model 100/200 - NEC PC 8201A
Olivetti M10

Portable Software

AutoPack SPECIAL (Model 100 & NEC only) $89.50 -About all you need on one tape. Includes: **AutoPen, AutoPad, AutoBase, AutoSort, TFILE, TRIP, CALC** and **AutoPen N&A.** Over 50% off separate prices.

AutoPen (2.5K) $29.95 - Word processing using standard formats. 22 text commands for format control. Print from RAM, tape and keyboard; chain files; multiple copies; continuous or cut paper; and more features. Customize for your printer. Best available for size and price.

AutoPen, N&A (3.7K) $39.50 - Merges names, addresses and saluations into letters, prints labels and addresses envelopes. N&A data management system. Includes AutoPen.

AutoPad (5.4K) $39.50 - 26 by 99 spreadsheet. Variable column width and format. Math, statistical and financial functions. Sort, replicate, calculator and other features. Printer output with titles and footnotes.

AutoBase (2K) $29.50 - Data base management for limited RAM. Design input forms using up to 16 fields. Use up to 9 keyword or relational field criteria to select records for display or printing. Print forms or specific fields in a list or label format.

AutoSort (.4K) $14.50 - Sort single or multiple (AutoBase, N&A, INDEX, etc.) field records.

BOOK (3.8K) $29.50 - Single entry bookkeeping for self employed or small businesses using SCHEDULE C tax accounts. Summary review and detailed printer output.

TFILE (1.4K) $29.50 - Tape file utility to review, compute size, delete, and auto save or load files. Tape directory with printer output.

TRIP (2K) $29.50 - Itinerary, expense account and trip report. Review and printer output.

CHECK (2K) $29.50 - Maintains account balance and records. Review and printer output.

INDEX (3.4K) $29.50 - Sorts and prints multi column lists. Indexes page references.

CALC (.6K) $14.50 - Allows you to use your computer like a simple pocket calculator.

Add $3.00 for mailing and handling
Send for FREE catalog

CSA Software, Box 22261
Chattanooga, TN 37422
24 Hr. toll free order desk
800-628-2828 Ext. 508

VISA INFORMATION 615-892-2339 MasterCard

Circle 8 on Reader Service Card

This is an example program which uses the ACCEPT subroutine. It is totally nonsensical, but it will give you a feel for the various options available with ACCEPT. Just follow the on-screen prompts. WARNING: There is no error checking.

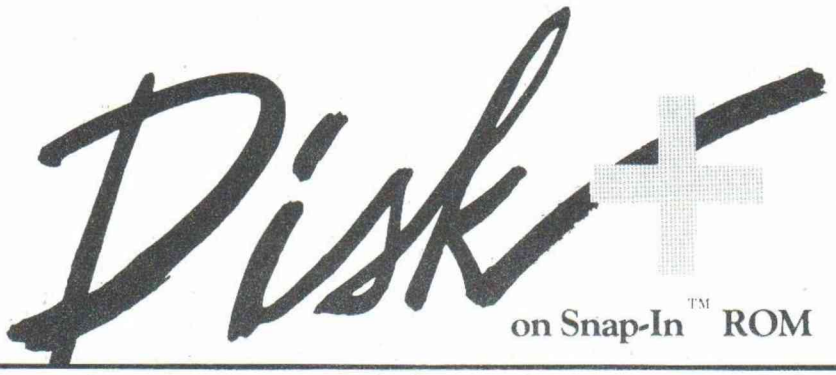
```
100 DIGIT$="0123456789"
      :UALPHA$="ABCDEFGHIJKLMNOPQRSTUVWXYZ"
110 CLS
      :PRINT @3,"ENTER ANY DATE"
      :LINE(18,9)-(101,9)
120 PRINT @83,"MONTH:";SPACE$(11);"DAY:";SPACE$(4);
      "YEAR:"
130 LINE(54,25)-(109,25)
      :LINE(144,25)-(157,25)
      :LINE(198,25)-(221,25)
140 ALERT=1
      :AT=89
      :SIZE=9
      :MASK$=UALPHA$
      :GOSUB 60000
      :M$=IN$
150 AT=104
      :SIZE=2
      :MASK$=DIGIT$
      :GOSUB 60000
      :D$=IN$
160 AT=113
      :SIZE=4
      :MASK$=DIGIT$
      :GOSUB 60000
      :Y$=IN$
170 PRINT @163,"NOW ENTER ANYTHING YOU WANT TO"
180 LINE(20,44)-(194,58),1,B
      :LINE(21,45)-(193,57),1,B
190 AT=244
      :SIZE=28
      :TEXT$="ENTER OR REJECT THIS DEFAULT"
      :GOSUB 60000
200 FOR N=1 TO 150
      :NEXT
      :CLS
210 PRINT "YOUR DATE WAS ";M$;" ";D$;", ";Y$;" AND"
220 PRINT @80,"YOU TYPED: ";IN$
      :LINE(66,24)-(64+6*LEN(IN$),24)
230 PRINT @244,"PRESS 'R' TO REPEAT; 'Q' TO QUIT"
240 LINE(20,44)-(218,58),1,B
      :LINE(21,45)-(217,57),1,B
      :BEEP
250 IN$=INKEY$
      :IF IN$="" THEN 250
260 IF IN$="R" THEN 110 ELSE IF IN$<>"Q" THEN 250
```

equal SIZE and printed at the location defined by AT. A beep is sounded if the ALERT variable does not equal zero.

- Line 60030: The cursor is placed at the appropriate screen location and made visible.
- Line 60040: The keyboard is read over and over again until a key is pressed.
- Line 60050: If the first key pressed on this call to the subroutine is not enter, the cursor is made invisible, TEXT$ is set to a number of blank spaces equal to SIZE and is printed to the screen (erasing any default text).
- Line 60060: The ASCII value of a keystroke is stored in the ZK variable. If ZK does not represent a printed character then program execution skips to line 60080. If it does, then the subroutine checks to see if the character will exceed the size of the input field and warns the user accordingly.
- Line 60070: If a valid, printable character is entered, then the keystroke is inserted into its proper location in TEXT$, the cursor is made invisible and the new TEXT$ is printed on the screen.
- Line 60080: Defines backspace and delete keystrokes.
- Line 60090: Defines right arrow or Ctrl-D keystrokes.
- Line 60100: Defines left arrow or Ctrl-S keystrokes.
- Line 60110: Defines Ctrl-Q and Ctrl-R keystrokes.
- Line 60120: Defines function of escape (ESC) key.
- Line 60130: Defines function of BREAK key.
- Line 60140: Warning sounded if ENTER is not pressed.
- Line 60150: ZK is set to one more than the value of SIZE. If TEXT$ is all blanks, IN$ is set to the null string and execution resumes at line 60180.
- Line 60160: First, ZK is decremented. Then, if ZK is not zero and if the ZKth position in TEXT$ is a blank space, the loop is repeated. Otherwise, TEXT$ is truncated (to remove any trailing blank spaces) and ZK is reset to zero.
- Line 60170: First, ZK is incremented. If ZK is not equal to SIZE and the ZKth posiiton is blank, the loop is repeated. Otherwise TEXT$ is truncated (to remove a leading blank spaces) and IN$ is set equal to the truncated string.
- Line 60180: SIZE, MASLK$ and TEXT$ are set to their respective default values. The BREAK key is re-enabled and the scroll lock is removed. The subroutine is exited. □

Please help us rate this article's value. If you've found it very valuable, circle 167 on the Reader Service Card. If it was moderately valuable, circle 168—and if it wasn't valuable to you, circle 169.

USE YOUR DESKTOP COMPUTER AS A DISK DRIVE FOR YOUR M-100.



NOW AVAILABLE ON M-200

Try *Disk+* for 30 days. If you aren't as excited as we are, return it for a full refund.

When we designed *Disk+* we did it out of necessity. We wanted a way that we could just connect a Model 100 to our desktop computer with a cable and save files onto the desktop's disk drive. We wanted it to be so simple to use it would be self-explanatory.

Picture this. *Disk+* comes to you on a Snap-in ROM and a diskette for your desktop. You take a quarter and open the little compartment on the back of your Model 100. Then you just press the ROM into the socket. *Disk+* appears on your main menu just like a built-in.

You connect your Model 100 to your other computer using an RS232 cable (available from PCSG for $40).

You just place the *Disk+* diskette into the desktop's drive and turn on the computer. It powers up automatically and says "awaiting command" on your desktop's screen. Then you just put the widebar cursor on the Model 100 main menu on *Disk+* and press ENTER. You are shown your RAM files arranged just like the main menu.

To save a file to your other system's disk drive, you just move the widebar cursor to the file you want to save and press ENTER. It is saved instantly with no further action.

To look at the disk directory, you just press a function key on your Model 100. You see immediately the disk directory on your Model 100 screen, and it is arranged just like your Model 100's main menu.

To load a file from the diskette to your Model 100, you just move the widebar cursor to the file and press ENTER. The file is transferred to your Model 100's RAM instantly. You can press F8 and go back to the main menu, and the file you loaded from diskette is there, ready to use.

It is so nice to be able to keep your documents, programs (both BASIC and machine code) and *Lucid* spreadsheet files on the diskette, and bring them back when you need them. All files are ready to run or use with no changes or protocol by you.

If you have access to a desktop computer and don't have *Disk+*, then evidently we have done a poor job telling you about it.

All files and programs that you load or save, go over and come back exactly as they are supposed to be because of full error checking. This guaranteed integrity is really a comfort. *Disk+* is wonderful in so many other ways. For example, you can do a "save all" of all your RAM files with just a touch of a function key. That group of files is saved on the diskette under a single filename with a .SD (for subdirectory) extension. Any time you want, you can bring back all those files at once, or just one or two if you like, again with one-button ease.

Disk+ takes up no RAM. That's zero bytes either for storing the program or for operating overhead.

What really excites most *Disk+* users is text file cross compatibility. Your Model 100's text files are usable on your desktop computer, and your desktop's text files become Model 100 text files.

This means you can write something on your Model 100, and with *Disk+* transfer it instantly to your desktop and start using it right away on your bigger computer. Or the way we like to work is to type in a document on the desktop computer and then transfer it to our Model 100 with *Disk+*. Then we print out the document, beautifully formatted, using WRITE ROM.

Disk+ works with just about every micro sold, from IBM PC and its clones, to all Radio Shack computers (yes, all), to Apple II, Kaypro, Epson and most CPM. Just ask us. More than likely, your computer is supported.

Incidentally, hundreds of Model 100 owners have gone to their Radio Shack stores and bought a color computer because it is so low priced, and with *Disk+* they have an inexpensive disk drive.

And if that weren't enough, how about this: *Disk+* also provides cross-compatibility between different computers like IBM, Apple or the Model 4 using the Model 100 as the intermediary device. Quite a feature!

The snap-in ROM is really great because you can use other ROMs like *Lucid* or WRITE ROM. They snap in and out as easily as an Atari game cartridge and you never lose your files in RAM.

Anyone who ever uses *Disk+* simply can't do without it. But so many times we have had new users call us and say, "Wow! I had no idea when I ordered it that *Disk+* would be so fantastic. I just couldn't believe that I could use my desktop computer's disk drive with my Model 100 just like it is another main menu."

That's why we sell *Disk+* on a thirty-day trial. If you aren't completely satisfied, return it within thirty days for a full refund. Priced at $149.95 on Snap-in ROM. MasterCard, Visa or COD.

1-214-351-0564

PORTABLE COMPUTER SUPPORT GROUP

11035 Harry Hines Blvd., #207, Dallas, Texas 75229 • 1(214) 351-0564

PCSG provides hotline software support for the Model 100. Call us at 1-214-351-0564

© PCSG 1985

Circle 36 on Reader Service Card

PORTABLE BASICS

For your Model 100, TANDY 200,

or NEC 8201

UTILITY PROGRAMS: *Everyone needs at least one of these programs. THEY ARE AN EXCEPTIONAL COMPUTING VALUE. Written in BASIC — No conflict with Machine Language programs, DVI, or other peripherals. Only $14.95 for your first program, $9.95 for each additional one (in the same order). Buy 3 and choose a 4th program free!*

RENUMBER — *2K — Renumbers Basic Programs in place. (Models 100 and 200 only).*

DISASSEMBLER — *1.3K — Perhaps the smallest disassembler around. Output to LCD, LPT, RAM, COM, or CAS.*

ASSEMBLER — *2.2K — Compile your own machine language programs. Improved to 150 bytes/minute.*

CONVERT — *.5K — Conversions between Decimal, Hex, and Binary numbers.*

HEXSAVE — *.5K — Save and Reload Machine Language programs using ASCII data. Allows uploading to your desktop computer.*

ANNUITY CALCULATOR — *1.5K — Present Value, Future Value, Payments, Interest Rate. Compare loans or plan for the future!*

CALENDAR — *1K — Display any month since 1582 AD! Scroll forward, backward, or enter new month with one key.*

TIMER/ALARM — *1 K — Countdown timer, stopwatch, or alarm. Perfect for eliminating missed wake-up calls!*

FILE SIZE — *.6K — Display the RAM address and number of bytes used by each of your files. Helps with memory management.*

LINE FEED — *.3K — Enable/Disable Line feeds instead of flipping DIP switches. Status displayed or changed from main menu. (Models 100 and 200 only).*

SCREEN DUMP — *.5K — Send Graphics to your printer! Most Daisywheel and Dot Matrix printers can be used. Send us your printer control codes so we can set up the program for you.*

STATISTICS — *1K — Compute Mean, Standard Deviation, and Variance of a Normal distribution. Reads data from a text file.*

WEIBULL STATISTICS — *1K — Characteristic Life, Reliability, and Confidence. Multiple Samples, Suspended Tests.*

MACHINE LANGUAGE PROGRAMS: *$17.95 each. All of them are Relocatable! And none of them need any free RAM. None.*

CASSETTE — *2K — Back up all your files at once. Only takes 4 minutes for a 32K save or load. (Models 100 and 200 only).*

SCREEN DUMP — *.5K — Similar to the BASIC version, but much faster. Send us your printer codes when ordering this.*

ASSEMBLER — *1.4K — Includes ORG, DATA, STR, RES, EQU, and $ pseudo-ops. Compact and FAST!*

Need something that isn't here? **CUSTOM** *Software services available, too. Send me your application, I'll send you a quote. Most jobs $50–$250.*

These are good, well-written programs. Don't let their size fool you. A lot of work was done to insure minimum use of your portable's RAM. The prices are low because the author and seller are the same person. That also means excellent customer support!

Complete collection of all programs $59.95

ORDERING INFO:

Add $2.00 S&H per order. Michigan Residents add 4% sales tax. Checks, MasterCard, and VISA accepted. No Purchase Orders unless payment is included. No COD's. Thank You very much!

PORTABLE BASICS, INC.
P.O. Box 696
Comstock, MI 49041
616-343-9315

Circle 42 on Reader Service Card

AN EMMY NOMINATION

Axonix Corporation has announced an inexpensive video interface that allows you to connect your Model 100 or NEC 8201 to a monitor or television set.

The ThinVid connects to the microbus port on either computer and provides a monochrome composite or video output for driving an external monitor.

ThinVid allows the use of an inexpensive portable TV for a full page text display of 80 characters by 25 lines. An optional internal rechargeable battery pack gives continuous operation with external monitor for up to eight hours between charges. The standard composite output is capable of directly driving several monitors and can interface directly to most commercial VCRs.

ThinVid's compact size (six by five by two inches) and low weight (1.5 pounds) means easy portability. Mobile chargers are also available for automobile charging and DC operation.

ThinVid retails for $249.95. The optional battery pack is $49.95.

Contact Axonix Corporation, 417 Wakara Way, Suite 130, Salt Lake City, UT 84108, (801) 582-9271.
Circle No. 104

Speaking of Bigger Screens

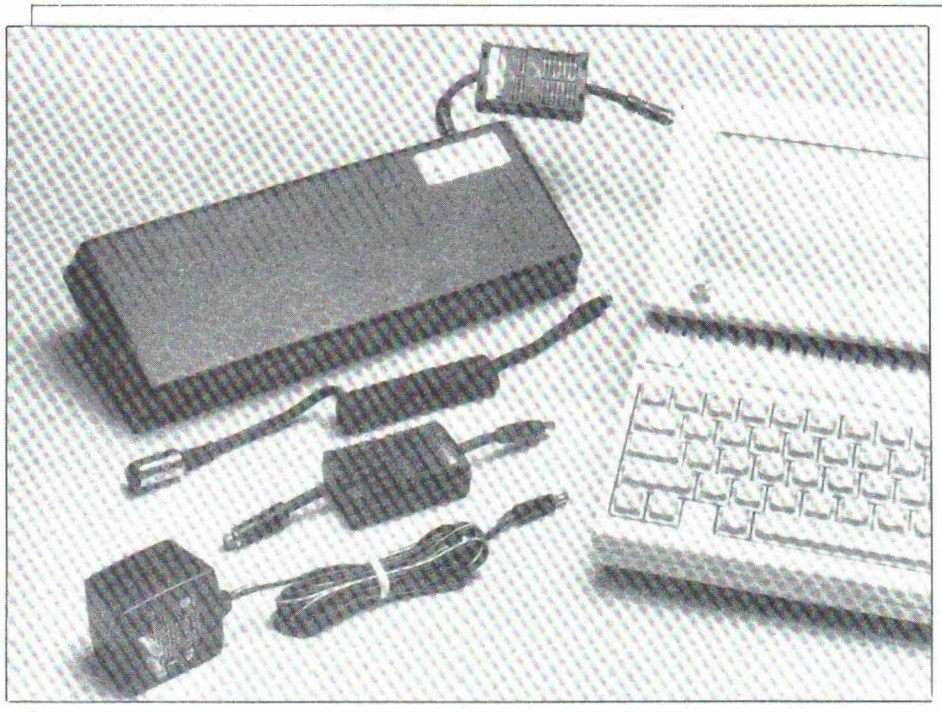
Addressing an important concern of laptop customers, NEC has introduced a larger LCD screen for their PC-8401A "Portable Office."

The new model displays 80 by 16 characters on a 9.5 by 3 inch LCD screen. Resolution remains unchanged at 480 by 128 dots. This means larger dot size and thus bigger characters. The end result is better legibility.

Despite the larger screen, the PC-8401A weighs under six pounds. Battery life is unchanged with over eight hours of continuous use.

The "Portable Office" comes with built-in word processing and spreadsheet software. In addition, it can run third party packages such as DBase II, SuperCalc and Multiplan in desktop mode.

The PC-8401A is available at a retail price of $999. Contact NEC Home Electronics (U.S.A.) Inc., 1401 Estes Avenue, Elk Grove Village, IL 60007, (312) 228-5900.
Circle No. 105



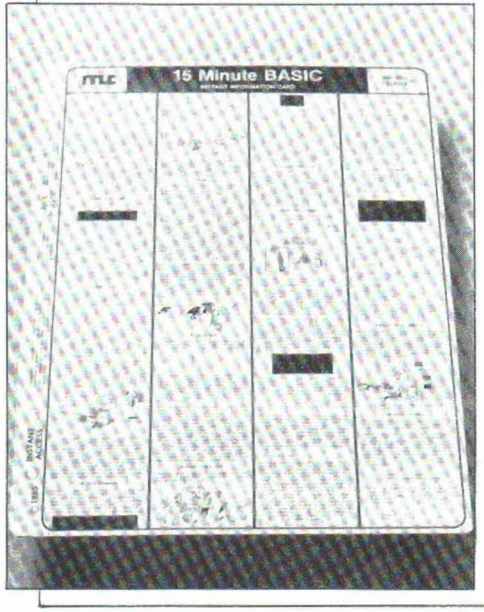
Life Never Ending

Ever stop to think how many AA batteries you've bought for your portable during its lifetime? Worse yet, have you considered how many more you'll have to buy?

Computer Coverup, Inc. of Chicago, IL has introduced a rechargeable, maintenance free battery pack that provides up to six hours of operation and fits in a briefcase.

The power supply features a voltage meter which safeguards against low voltage shutdown. Its 12-volt nickel cadmium battery carries a one year warranty and is fused to protect valuable equipment.

Contact Computer Coverup, Inc., 1740 N. Marshfield, Chicago, IL 60622, (800) 282-2541.
Circle No. 106



BASIC Help

If you've been waiting for a quick and easy way to learn how to write BASIC programs, help is on the way.

From Micro Logic Corp. comes their Micro Chart #12 entitled *15 Minute BASIC*. It's a standard page-size reference card which uses simple language and illustrations to get you programming fast.

It assumes no prior programming knowledge and covers such elementary topics as fundamental statement types, variables, formulas, strings, arrays, functions and more.

Micro Charts are available with a money back guarantee for $5.95 (plus $1.00 postage). Contact Micro Logic, Dept P, POB 174, Hackensack, NJ 07602, (201) 342-6518.
Circle No. 108

Command Performance

As any programmer knows, all printers have their own idiosyncrasies. What prints beautifully on one, looks horrendous on another. Hours are spent trying to find the command that's causing the problem.

Cardinal Point Inc. has just published something to ease the frustration. Called the *Programmers' Handbook of Computer Printer Commands*, it's a compilation of printer control codes of daisywheel and dot matrix desktop printers manufactured during and before 1984.

It lists control codes for more than 170 printer models made by 43 manufacturers. Codes are listed in table format alphabetically by manufacturer and subdivided by model.

Tables list a text version of the codes as well as decimal and hexadecimal equivalent (or octal where needed) and a brief description of the code's function. The book also contains names and addresses of all manufacturers.

The retail price is $37.95. Contact Cardinal Point Inc., P.O. Box 596, Ellettsville, IN 47429, (812) 876-7811.
Circle No. 107

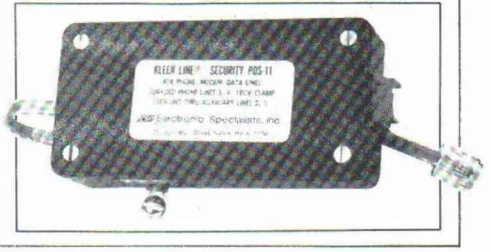
Modem Savior

Fearful of damaging telephone line spikes caused by lightning, spherics or phone office switch gear? Then you might look into a modem protector.

Based on the same principle as an electronic surge protector, the Kleen Line Security system uses modern two stage semi-conductor and gas discharge suppression techniques to ward off dangerous spikes.

It comes in two models. One is for standard four pin modular connectors (RJ-11) and the other for eight pin connectors (RJ-45).

Kleen Line is priced at $69.95. Contact Electronic Specialists, Inc., 171 South Main Street, P.O. Box 389, Natick, MA 01760, (800) 225-4876.
Circle No. 109 □



The Model 300 Is Here... You Already Own It!

SUPERA: Like Getting A Whole New Computer

In January 1983, Micro Demon introduced PRO AID. Suddenly Model 100 users found that their computer had capabilities far beyond their expectations. In his InfoWorld review of PRO AID, Reviewer Greg Springer, anticipating the announcement of the Model 200, wrote,

"PRO AID adds enough new capabilities to the current model that the wait for upgraded portability is made much easier and maybe even unnecessary."

Well, the Model 200 is here. But so is SUPERA! SUPERA takes a giant step past PRO AID, and adds a multitude of powerful new features to the Model 100, making it into the computer it was meant to be.

Once it is loaded, SUPERA works transparently to you and your programs. If it weren't for all the wonderful things it does, you would never even know it was there. If you want to remove it, SUPERA is as easy to take out as KILLing a BASIC program.

Unique Format

SUPERA loads and runs as if it were a BASIC program (it's really all machine language). Because of this unique format, SUPERA is compatible with most other software and hardware. It also only requires 4.3K of memory.

With SUPERA installed, every facet of your computer suddenly takes on an aura of new-found power.

In Text

While in TEXT you can

- Use a really fast and flexible search and replace function.
- Turn on a special type-over mode in which typed characters replace text instead of being inserted.
- Read a second file while editing a first.
- Use control keys to delete words and lines, to change the case of the character under the cursor, and to activate the paste key.
- Cause the display to scroll slowly up or down a line at a time.
- Redefine special keys to act as SHIFTed keys, control keys, or graphics characters.
- Turn the computer off without losing your place.
- Access special HELP files.
- Use 26 new macro function keys.
  and more!

All of Supera's editing features become available whenever you enter EDIT mode to edit a BASIC program.

Super Function Keys

A great deal of SUPERA's power comes from its 26 macro function keys. These easy to define keys can be used in TEXT, TELCOM and BASIC. Each key generally defines a string of 14 characters, but in both BASIC and TEXT several keys can be concatenated into one so as to provide longer keys. The power of these function keys is hard to imagine until you try them.

In TEXT they can provide you with much more than just easy entry of boiler-plate strings. They can also be defined to automatically carry out complicated editing sequences.

In TELCOM these keys can save you money while accessing a data base such as Compuserve. They also save you the trouble of remembering such things as passwords, ID numbers, and special commands.

In BASIC use the keys to enter BASIC commands, and to facillitate typing in programs, to name just a few applications.

Moreover, SUPERA allows you to save and load entire sets of function keys by a single control key action. Thus you might keep a set of keys called TEXKEY.CO handy to use in TEXT, another keyset for BASIC, and yet another for TELCOM.

In BASIC

You get the 26 function keys, and also

- Single stroke access to the built-in software such as TEXT and TELCOM
- Automatic Line Numbers
- Control key activation of selected BASIC commands
- You can redefine special keys

In Menu

You can use control keys to kill and rename files.

Calculator Mode

From BASIC you can enter an entirely new mode called Calculator mode. While in this mode you can quickly and easily evaluate expressions. Calculator mode also provides several new BASIC functions.

Better Than PRO AID

It's true that PRO AID was a significant enhancement to the Model 100, but SUPERA goes far beyond it. In a message on the Compuserve Model 100 SIG, system operator Dave Thomas said,

"Now with SUPERA, the original PRO AID has been enhanced beyond belief... If there is a single, more useful utility on the market for the Model 100 than SUPERA, I haven't heard of it and t'would boggle my mind if t'was!!"

TEX PRO For Word Processing

TEX PRO consists of ALL the TEXT editing features of SUPERA, uses only 2.8K of memory, and sells for just $49.95. It may be the choice of those who seldom use their Model 100 except for word processing, and don't need all the additional power of SUPERA.

MICRO DEMON, INC.

For more information or to order, write to Micro Demon, Inc., P.O. Box 50162, Columbia, SC 29250. Or call 803-733-0980 anytime. SUPERA $79.95, TEX PRO $49.95. Add $3.00 for shipping. Visa and Mastercard are welcome.

Changes your Model 100 into a totally different computer with capability you never thought possible.

Lucid™ on Snap-In™ ROM

Infoworld rated Lucid's performance "excellent"

NOW AVAILABLE ON M-200

PCSG says "Satisfaction Guaranteed or your money back within 30 days!"

LUCID© is here now. It is on a ROM cartridge that snaps into the compartment on the back of your Model 100. It takes no memory to load and no memory for operating overhead. That means you have the full 29.6k bytes free to store your data.

First, LUCID© is memory conserving. It will let you build a large spreadsheet – 255 row by 126 column capacity. You build huge spreadsheets in your Model 100's RAM that could consume 80 to 100K on a desktop computer.

Secondly, LUCID© is fast. LUCID© is so rapid, a 36 column corporate financial statement took less than 4 seconds to calculate.

Thirdly, LUCID© has features you won't find in most other spreadsheets. For example, when you type a label (text) it will cross column boundaries; in other words when you type a label or title it will appear as you type it irrespective of column or width. LUCID© also allows you to set column widths individually, and of course LUCID© has insert row and insert columns, as well as other standard features. LUCID© even lets your formulas refer to cells in other spreadsheet files.

Further, LUCID© has what no other spreadsheet has: Cut, Copy, and Paste. It uses the same keys as Cut and Paste in TEXT, but here's the difference: it takes all the formulas with it when you paste and they all automatically recalculate with the entire sheet.

And here is what is really amazing. You can copy or cut from one spreadsheet and paste into another spreadsheet or even a TEXT file.

LUCID©supports all BASIC math functions as well as Log, sine, cosine, tangent, exponentiation and other sophisticated math functions.

LUCID© has so many features that you will say "this is what I need in a spreadsheet", such as automatic prompting of an incorrectly typed-in formula showing just where the mistake was made.

LUCID© has expanded "go to" functions that remember and produce a windowing capability.

But perhaps most remarkable is that LUCID© is not only a spreadsheet but a program generator as well. First, LUCID© lets you protect all cells against entry or change, and then unprotect just the cells you want for someone else to use as input fields.

LUCID© will not only process values, but text input as well so that the facts other than numbers can be responded to. LUCID© has the ability for you to refer in a formula to cells containing words. This feature combines with the capacity of doing "if then" statements that work by doing table lookups against even massive X/Y charts of text or numerical information. You can produce a program that responds to inputs with no programming knowledge whatsoever.

You can prepare a report section in your spreadsheet with instructions to your user for printout, and they can produce a personalized printout that responds to their input. All your formulas and tables that did the calculations and provided the facts are invisible to that user. LUCID© is useful for doctors for patient questionnaires, troubleshooting technicians, purchase clerks, people doing job quotes, stores for customer workups, insurance agents and anybody who needs to process specific facts and numbers to produce a report based on those responses.

LUCID© comes with a manual that explains not only the characteristics of LUCID©, but will train you how to use a spreadsheet even if you have never seen one before. You are shown how to do budgets, forecasts, breakeven analysis amortizations and many other types of personal and business reports and calculations.

User friendly is such an over-used term in this industry, but a typical comment has been "I have never seen a spreadsheet that does so much, and yet LUCID© is so much easier and faster to use."

LUCID© is a result of a most exhaustive developmental effort in which PCSG's objective was to develop a spreadsheet that was better than the state-of-the-art. We are so pleased because LUCID© provides for the Model 100 spreadsheet capability you cannot equal on a desktop computer.

LUCID© is, in our opinion and that of those who have examined it, a breakthrough. We sell it on a 30 day trial. If you are not completely satisfied, return it within 30 days for a full refund. Priced at **$99.** on snap-in ROM. MasterCard, Visa or COD.

© PCSG 1984

First with software for the Model 100

PORTABLE COMPUTER SUPPORT GROUP

1-214-351-0564

11035 Harry Hines Blvd., #207
Dallas, Texas 75229

WHAT YOU SEE AND WHAT YOU GET

T-View 80
Display enhancement program for the Model 100 and NEC PC-8201
Version 1.00
Traveling Software
11050 Fifth Avenue NE
Seattle, Washington 98125
(206) 367-8090
$39.95
Circle No. 146

By J.R. WILSON

Trying out new computer programs is a lot like going out on a blind date. A beautiful package and great build-up may conceal a contentious personality and lack of intelligence. On the other hand, the date you first think is average at best may on closer inspection blossom into something of which dreams are made.

But there's also a third category. One you might compare to kissing your sister. All of the elements are there, but it just doesn't *do* anything for you.

Which brings us to one of the latest offerings from Traveling Software (TS), the T-View 80. Their ad proudly proclaims that T-View 80 produces readable displays in eight lines by 60 columns on your portable's screen.

Well, I can vouch for that.

They note the display has full upper and lower case characters, with descenders.

Indeed it does.

You can use it in TEXT or TELCOM.

Quite right.

You can view previously created copy or enter new copy in the enhanced mode and paste the latter into any document at any point.

True, again.

They claim you can scroll left or right and, by doing so, see what your copy will look like at a full 80 columns.

Well, almost. Actually, the version tested shorted you by two columns. If you set your T-View 80 width at 65, for example, don't expect to get the same results if you then print out that document with a line length of 65. If, however, you set your printer's line width to 63, you'll get exactly what you saw on the screen.

This peculiarity holds true no matter what line length you set, from 10 to 80 (you can't exceed 80, so the most you can see and print is 78). But it's not a major problem and, as the ad claims, you definitely are seeing more text on your screen at one time than with the standard display.

AND THEY SAID IT WAS IMPOSSIBLE

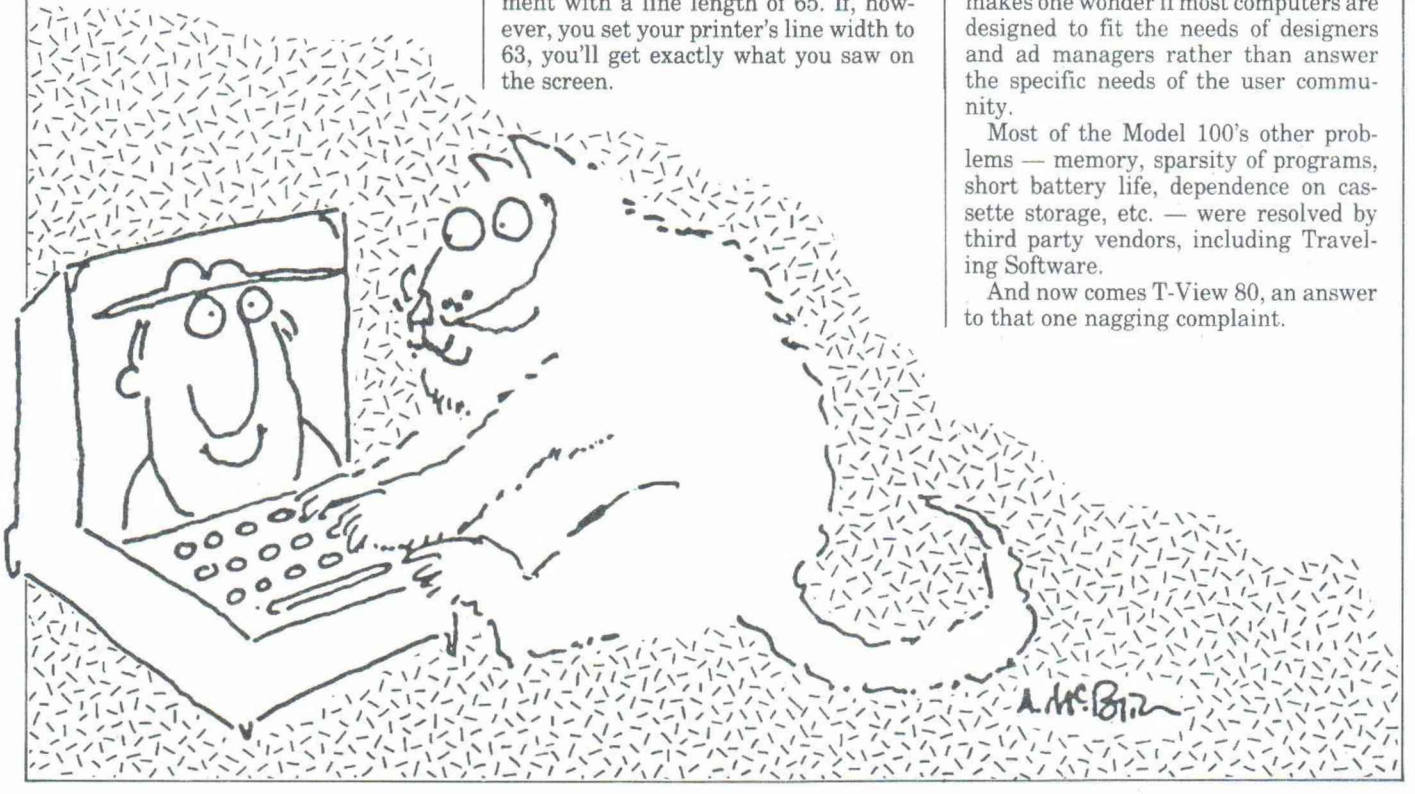
Probably what Tandy really said with regard to the 100's display was more along the lines of, "Here's what we decided was best for you. So take it and like it."

From the outset, screen size has hardly been the 100's greatest selling point. In fact, the eight line by 40 column display (duplicated on its sister machine from NEC) has probably drawn more complaints than almost anything else about the little darling.

Tandy's answer, with the Model 200, was to give you more *lines*, but no more columns. Hardly satisfactory, which makes one wonder if most computers are designed to fit the needs of designers and ad managers rather than answer the specific needs of the user community.

Most of the Model 100's other problems — memory, sparsity of programs, short battery life, dependence on cassette storage, etc. — were resolved by third party vendors, including Traveling Software.

And now comes T-View 80, an answer to that one nagging complaint.



BUT DOES IT SING AND DANCE?

After using it in all of its stated applications, after trying hard to work up a cheer, I must admit I'm left with only a resounding "So what?"

There may well be some people who could find 60 columns on the screen instead of 40 a worthwhile improvement — or horizontal scrolling to see another few columns an additional gain. It certainly would be an aid to spreadsheet users or others who are working with columns. And, if you keep an eye on that disappearing two columns, it can help you see what your copy will look like before you commit it to a printer.

But it would seem likely by now that most Model 100/200 users have come to grips with the 40 column format. Stuffing another 20 onto the screen doesn't seem like such a major breakthrough.

And it isn't a perfect exchange, either. For example, if you use non-printing control codes, be aware that the enhanced viewing mode eliminates them from the screen. It also makes some characters difficult to interpret.

T-View 80 does have all the Traveling Software niceties: A clear, well-written manual; an audio tutorial; the seemingly ever-present Memory Manager program tossed in for free. And, it's easy to use.

It does create a few headaches, however. If you're using any other machine language programs, you must *manually* clear high memory.

In its TEXT-80 mode, you can view an existing file, create a new file or paste in copy created in the ENTRY-80 mode. While in the enhanced mode, you can change the number of columns per line, move through the copy screen by screen (or set the program for automatic vertical scrolling). You also can scroll horizontally, in units of one, five or 20 columns at a time.

ENTRY-80 allows just that — you can create text in the enhanced mode. You cannot, however, edit any line but the one you are on at the time. You can adjust the text width and scroll horizontally.

Everything created in ENTRY-80 is stored in the Model 100's paste buffer. Exiting ENTRY-80 returns you to the main T-View 80 menu, where you can call up an existing file or create a new file and, using the PASTE key, transfer into it the text you created in ENTRY-80.

Again, this seems of little real value unless you are dealing with material in columns.

TELCOM-80 is identical to the Model 100's built-in TELCOM. But you can enter the enhanced mode (with 60 columns or whatever) by hitting the down arrow from TELCOM's terminal mode.

The first time you try this can be a bit of a shock, because what you'll have is a blank screen. There are four available functions, although they are not labled.

Pressing F1/D allows you to download text files from other computers, with the copy appearing on the Model 100 screen in the compressed T-View 80 character set. Basically, this operates the same as the standard download procedure.

Pressing F1/W allows you to set the width, from 10 to 80 columns (sort of).

F1/S is a strange little function Traveling Software calls the "Snoopy" mode. Basically, it puts back those non-printing control characters that T-View 80 zaps. The idea is, if you are having trouble with a file created by another computer, try loading it with "Snoopy" on to see if the problem stems from unusual control codes.

The final function simply returns you to the primary terminal mode by pressing F8.

So, there it is. If you need it, T-View 80 may be your dream date. But it would seem to me that most users would be better advised to spend the $40 on something a little more useful — say Traveling Software's T-backup or Idea — and keep on plugging with the old "eight by forty." □

A Friend Indeed

Disk-Buddy 5.0
12 utility programs for DVI users
BuddySystems
220 W. 24th St.
New York, NY 10011
$39.95
Circle No. 143

By J.R. WILSON

Cut your losses. The phrase is all too familiar to politicians, soldiers and those who struggle with the constant change — and frequent chicanery — found in the personal computer industry.

On rare, happy occasions, someone will hold out a helping hand, enabling the battle-weary user to "cut his losses" with at least a modicum of self-respect. For those unfortunate souls who shelled out large sums of money for Tandy's Disk/Video Interface (DVI), such help is now available.

The DVI is, quite frankly, an overpriced, under-supported disaster that can lead normally calm individuals to join the ranks of neo-Luddites and gleefully commit acts of computercide.

While Disk-Buddy can do nothing about the hardware problems, it does at least provide a welcome software aid to maintaining and copying files. More importantly, it offers the ability to run BASIC programs from disk without tying up RAM. And for programs using separate SPEC files, such as Tandy's Scripsit 100 and Portable Computer Support Group's Write Plus, it allows for the storage and simple use of custom formats.

The Disk-Buddy Pak also contains a host of supplemental programs that sort, transfer, append and perform other utility functions, most at the stroke of a single function key. Chief among those is RAM-Pal, which provides a single-stroke approach to saving files from RAM and can be used even without a disk drive attached.

DARK CLOUDS, SILVER LININGS

As all computer users know, every silver lining comes with a dark cloud. For Disk-Buddy, the biggest cloud is its documentation, which tends to be somewhat disjointed, assumes too much knowledge on the part of the user and fails to give examples.

(These are the standard problems associated with most software and hardware manuals and cited in nearly every review ever written. This leads one to believe that those who persist in producing such muddled documentation do not read reviews — or, more likely, don't read their own manuals.)

Some patience and experimentation will get you through the Disk-Buddy manual, however. Things also will go faster when you learn to skip past the commercials. For reasons known only to the author, the D-B manual shamelessly interrupts itself to hawk additional disk drives, power strips, monitors and printer buffers. A bit much for a 22-page document.

One program actually accounts for a quarter of the 12 programs listed. Two are alternates: DB5 for dual-drive systems, DB5.SNG for single drive units. The third, DBLOAD, takes up only 90 bytes and is all you really need in RAM. The main program, which occupies about four kilobytes (K), must be saved to your working disk.

The Ultimate Battery System for your Portable Computer

Prairie Power™ introduces a brand new battery, charger and carrying case that greatly extends the power and efficiency for lap-top computers such as the **Tandy 100 & 200, NEC 8201, 8401, Apple IIc, Epson and Sord.**

The heart of the **Prairie Power** sytem is the lightweight rechargeable battery pack that can, for example, power the Tandy 200 up to 160 hours. By comparison, its "AA's" last a mere 10-15 hours. By the time a Tandy 100 has used up 10 packs of "AA's" **Prairie Power** is ready for its first charge (180 hrs.) Our new battery system can even power the Apple IIc for 8 hours and contains a sophisticated circuit to warn when the battery is low.

The new two--step charger simplifies recharging by showing when the battery is charged and then switches to standby. You always know the battery is charged and ready-to-go, whether for emergencies or long trips on the road. Besides the assuredness and efficiency of a powerful battery system, **Prairie Power** will pay for itself over the cost of "AA's".

Best of all, the battery system and computer are housed in a handsome water-resistant padded Cordura case protected by support panels and thick foam inserts that hold computer, battery, charger, cables and accessories. A padded pocket can also hold a flat-panel screen, small recorder or 3.5 "drive and manuals. **Call our toll-free number today!**

A Compact System!

The Prairie Power system fits under any airline seat and measures only (17x13x5"). With Tandy 100, battery, case and charger, weight is only 12 lbs. Apple IIc system weighs 20 lbs. Battery is fully rechargeable, sealed, maintenance free, useable in any position and air transportable. Never again worry over shelf-worn "AA's"

PRAIRIE POWER SYSTEMS, INC.™

Prairie Power Systems, Inc.
768 Twelve Oaks Center
15500 Wayzata Blvd,
Wayzata, MN 612-475-1945

Model 10 Battery ($59.95) Cable ($19.95)
Two-Step Charger ($55.95) Cordura Case ($99.95)
M /C, Visa, Check, MO $US only.

Total System Price $169.95*

Toll-free1-800-435-8721

**Apple 12-volt system ($249.95) Freight extra ($6.00)*

NEW! MODEL 100 *3-in-1* ROM

Interactive Solutions*

All the software that you will ever need
on the Model 100 Portable:

1— **Data Base**
2— **Spread Sheet**
3— **Word Processor**
with **Mail Merge**

Now on a plug-in ROM. ***Integrated*** and easy as 1-2-3!

Interactive Solutions
Tandy Cat. #26-3844

Available at your nearest
Radio Shack®
COMPUTER CENTERS

■ **The Data Base** turns your Mod 100 into a personal filing system. You can store, examine, update select, sort and list a wide variety of information - from personnel records and inventory facts to appointment schedules and client lists.

■ **The Spreadsheet** turns your Mod 100 into a powerful decision tool. It is a full featured spreadsheet with 99x99 cells and provides fast decimal arithmetic in formula computation with complete range of scientific functions.

■ **The Word Processor** uses the Text editor of Mod 100 and gives you additional features for formatting and printing. You can set margins, line/para spacing, justify, define header/footer and use special print features like underline, **boldface**, etc.

In fact, the **Interactive Solutions** ***integrates*** all of your data information in Mod 100. With a touch of a function key, you can easily:

- Select and move items from **Data Base** files into **Spreadsheet** columns.
- Generate a report in **Data Base** program and move to the **Word Processor.**
- Cut any part of **Spreadsheet** and move to the **Word Processor.**
- Merge the items (like names, addresses) from **Data Base** files into a **Form Letter** and generate multiple letters or labels.

All this and much more in a 32K bytes ROM from

DCM data products

DCM Data Products
1710, Two Tandy Center
Fort Worth, Tx. 76102
Tel: 817/390-2762 Tlx:756916

See us at Booth M100
COMDEX/Fall '85
November 20-24, 1985
MGM Grand Hotel
Las Vegas, Nevada

*Copyright DCM Data Products, Licensed to Tandy Corporation. Radio Shack and Model 100 is a trademark of Tandy Corporation.
* Registered trademark of Tandy Corporation.

Circle 63 on Reader Service Card

Disk-Buddy assumes there is a monitor hooked to your system. If not, you can switch to the LCD by hitting the ESC key. If you never use a monitor, the manual explains how to modify the program accordingly.

Each disk can be assigned a title using one of the nine remaining programs, TITLE.BUD, which accepts titles up to 128 characters, but only displays 40.

MORE PROGRAMS, MORE FUNCTIONS

When called up on your screen (CRT or LCD), D-B displays the number of free bytes remaining on the current disk. The manual warns, however, that this is an estimate — and an invariably generous one, at that — and should be viewed as such.

It would be nice to get a quick display of individual file size, as well. Disk-Buddy provides this function through the use of an auxiliary program that must be called up separately. This probably isn't worth the trouble for most users.

Disk files are displayed in three columns. Text and ASCII files have a blank space before the extension, if any, while BASIC and system files display a dot. The cursor control keys can move the display up or down as needed if the number of files exceeds the screen display space.

Some functions are duplicated on the main menu. For example, with the wide-bar cursor over a file name, the Enter key will load and save a TEXT file or run (but not save) a BASIC file. Function key 2 (LOAD) accomplishes the same purpose.

Any TEXT file extension on disk is ignored and saved to RAM as FILENAME.DO. This lets the user maintain specialized files on disk, then transfer them to RAM without renaming them.

For example, let's say you have separate business, personal and group ADRS files. On disk, these might be named ADRS.BIZ, ADRS.PER and ADRS.PTA. When loaded to RAM, each becomes ADRS.DO and is ready to be called by the various programs that interact with ADRS.DO. The manual also warns that, because of this feature, you will overwrite any existing RAM file with the same filename.

BASIC files run using either approach are stored in the Model 100's BASIC buffer. A BASIC file loaded in this way can be accessed, run or edited until it is either saved to RAM from BASIC, another program is loaded or you type NEW.

TEXT files can be transferred to cassette, viewed on the screen or sent to a printer directly from disk, the latter with embedded printer codes handling the formatting requirements.

APPENDING AND EXCERPTING

Two or more files also can be joined into a single file using the APPEND function. A separate program, EXERPT, allows you to join — in RAM, in a new disk file, on screen or on paper — selected portions of different files. These functions can be used on BASIC files only if they have been saved in ASCII form.

One of the more interesting functions is STORE, which creates a new RAM file called DBFI.DO. This file contains the names of as many files as you wish to store and is accessed by other BuddySystems programs, such as EXERPT and BYTCNT (which counts the number of bytes in a specified file or group of files). The program searches the disk for the files identified in DBFI.DO and performs the appropriate task using those files.

A third way to run a BASIC file — even one saved in TEXT format — is to use the Function key 4 — RUN. If you attempt to use this key on a non-program file, it will generate an error message after attempting to load the file to BASIC.

Other main menu function keys enable the user to rename or kill a file on disk, change drives and exit to the main Model 100 menu.

In addition to serving as a toggle between the CRT and LCD, the ESC key can be used to terminate any load or copy function. It also will return you to the top of the program if pressed after receipt of an input/output error prompt.

While a DVI must be linked to the Model 100 and activated for most of the programs in this package, RAM-Pal operates nicely without it. The RAM-Pal menu offers options of saving a specified file or (with the wide cursor over BASIC) all RAM files to either of two disk drives

(continued on page 51)

Hello Rangoon

Not only can your portable communicate over telephone lines but airwaves as well. Here's a program that would even make Samuel Morse proud.

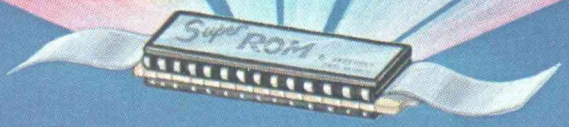
By Louis C. Graue

The Model 100 is a fantastic appliance for the ham radio shack. It takes up less space than a notebook yet can do almost anything a ham operator would ask of a full size computer. Programs for operating CW or RTTY, keeping a log, calculating antenna designs or filter cicuits, or anything you do frequently with a computer can all be stored in memory. The names of your programs appear on the screen when you turn on the computer and can be put into operation by the press of a key.

(continued on page 54)

SUPER ROM

Lucid Spreadsheet Write ROM Database Outliner



NOW AVAILABLE ON M-200

NOW YOU CAN REALLY HAVE IT ALL!

All on one ROM. Truly the finest four programs available for the Model 100 — guaranteed. Try it for 30 days. If you aren't blown away by the excellence return it for a full refund.

$199.95

The four best programs for the Model 100 all on one ROM. 32K of power without using any RAM for program storage. This is the PCSG Snap-In ROM that just presses easily into the little ROM socket in the compartment on the back. You access the four right from the main menu like built-ins.

Write ROM — the definitive word processor for the Model 100. Function key formatting or dot commands. Search and replace. Library feature — inserts words, phrases or whole documents into text from just a code. MAP lets you see a picture of your document. In all there are 60 features and functions. No one can claim faster operation. FORM lets you create interactive forms with on-screen prompts that you can answer from the keyboard. Nothing else for the Model 100 compares with the features of Write ROM. Exactly the same as the Write ROM sold as a single program. Infoworld says it "makes the Model 100 a viable writing unit ... surpassed our highest expectations for quality and clarity."

Lucid Spreadsheet: This is the one PICO magazine says "blows Multiplan right out of the socket" and Infoworld performance rated as "excellent" and said "makes the Model 100 compute." Gives you features you cannot get with Lotus 123. Lets you build spreadsheets in your Model 100 that would consume 140-150K on a desktop. Program generating capability with no programming knowledge required. Variable column widths. Includes find and sort with function key control. It's fast, recalculates like lightning. No feature has been taken from the original, only new ones added.

Database: This is a relational data base like no other. You can do everything from mailing lists to invoices. No complicated pseudo-coding, you create input screens as simply as typing into TEXT. You are not limited by size; you can have as large an input screen as you wish. Prints out reports or forms, getting information from as many files as you like. Complete math between fields. Total interface with Lucid worksheets.

Outliner: Does everything that Thinktank does on a PC but a whole lot better. Includes a Sort for your headlines. Lets you have headlines of up to 240 characters. Has cloning, hoisting and sideways scroll up to 250 characters. Like Lucid, this one sets a new standard for outliners. This is the way to plan and organize your projects.

Present Lucid and Write ROM owners can upgrade for $100. If you have both it's $75.

As usual PCSG sells the Super ROM on a thirty day guarantee. If for any reason you are not satisfied, simply return it for a full refund.

We are excited about this product. Super ROM gives the Model 100 the true power of a desktop. No other multi-program ROM has software that compares. But don't take our word for it. We invite you to make that comparison yourself. Priced at $199.95 on Snap-In ROM.

(214) 351-0564

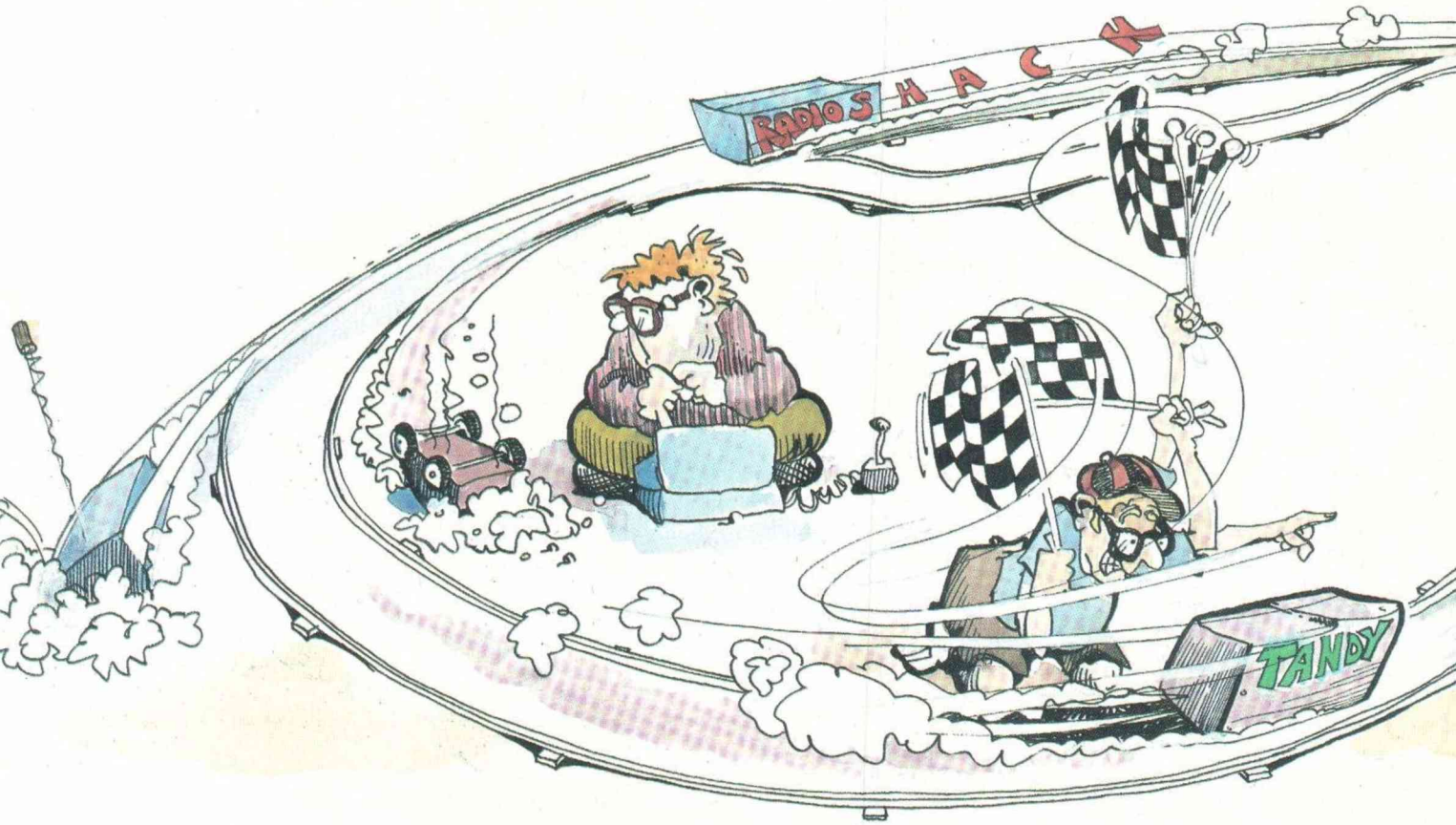
PERSONAL COMPUTER SUPPORT GROUP

11035 Harry Hines Blvd., #206, Dallas, TX 75229

MC, Visa, American Express, Check, or C.O.D.

© PCSG

TANDY ENTERS THE FRAY



Their first attempt at a disk drive was disastrous. This time around they've made amends. Although not world class, it's on the road to being a major player.

By Park M. Morrison

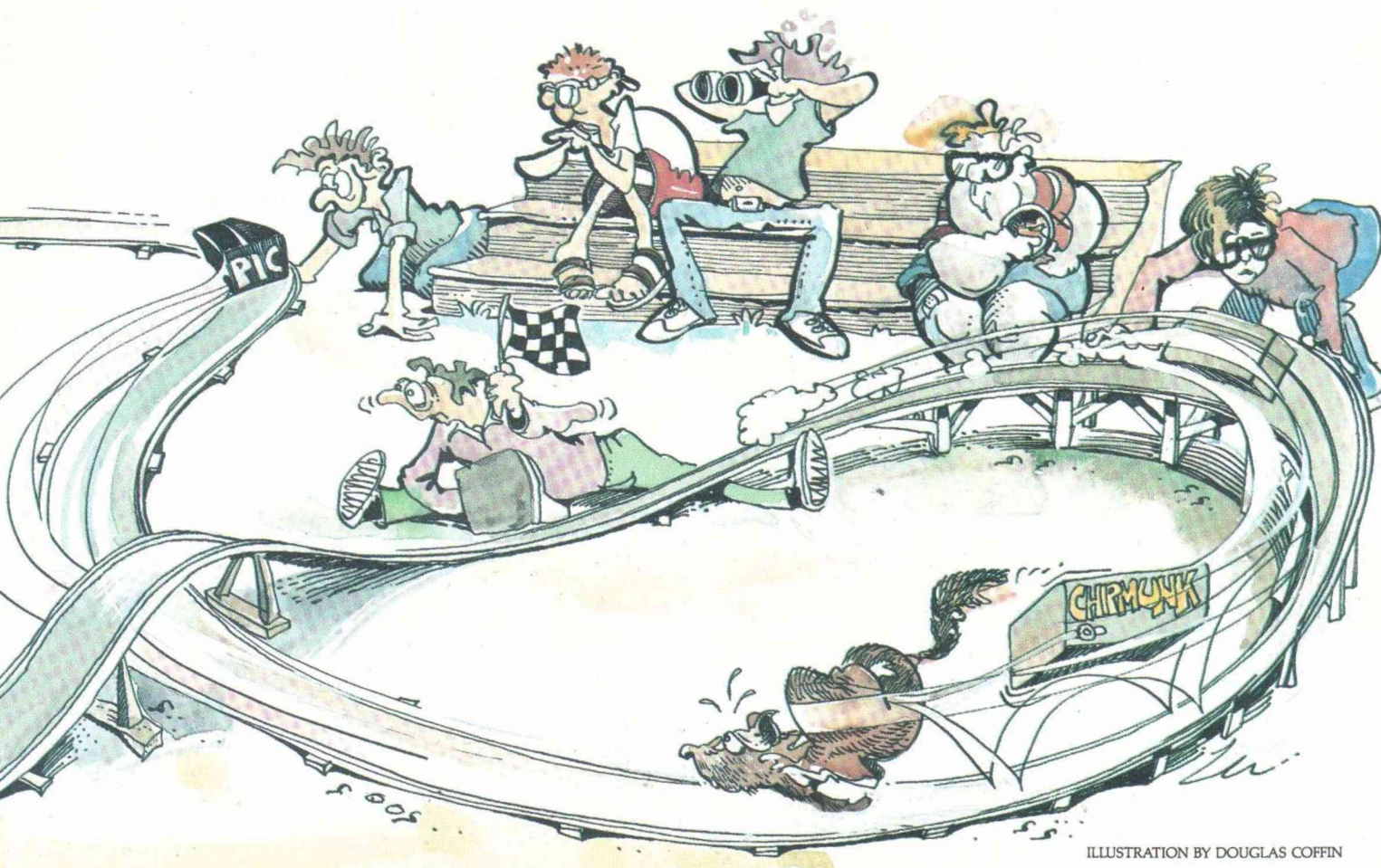


ILLUSTRATION BY DOUGLAS COFFIN

It's here. Tandy's entry in the portable disk drive Grand Prix. It's no Ferrari or Maserati but then, it's no Gremlin either.

And that's good news. We've been waiting for it for a long time. Tandy's first attempt at providing a disk drive for the portable market was the unheralded Disk/Video Interface (DVI). Big, slow and expensive, the DVI really had no place in the world of portables.

Not so the Tandy Portable Disk Drive. It's compact, easy to use, and at $199 epitomizes the laptop philosophy.

PORTABILITY: THE NAME OF THE GAME

Tandy learned some valuable lessons from the DVI. For one, if it's bigger than a breadbox, it's not something people are going to want to lug around in a briefcase. That is of course, if there is a briefcase big enough to carry it.

Well, on that score, Tandy has made amends. Their new portable disk drive (PDD) is all of 6.13 inches long by 4.63 inches wide by 2 inches high. Weighing in at 1.75 pounds, all told, it's smaller than its two major competitors: Portable Computer Support Group's (PCSG) Chipmunk and the PIC Disk from Personal Integrated Computers.

Of course, size alone does not a good disk drive make. Design features help and in that respect, the PDD has the right stuff — a low-battery light, an easy to use disk-eject bar, accessible power switch and clearly visible access indicator light. The ejection button is stiff, so use care when ejecting a disk, to avoid pushing the drive off the table.

But functionality is really all-important and in that context, the PDD performs well, although it's limited as to what it can do.

GETTING IT TOGETHER

The entire PDD package consists of the disk drive, manual, system diskette and cable. The PDD doesn't look complicated to hook up and it's not.

As with any new toy, batteries aren't included. The PDD requires four AA size batteries. However, it may also be run off an AC adaptor. Battery life is estimated at a minimum of two hours during continuous read/write operation and at least 10 during wait-only.

The disk drive connects to your computer via the

TAKE
YOUR
PICK.
LOW
BATTERY
POWER
OFF
TANDY PORTABLE DISK DRIVE
EJECT
ACTUAL SIZE

RADIO SHACK'S NEW 100K PORTABLE DISK DRIVE CLEARS UP YOUR CASSETTE CLUTTER

MEET THE NEW STORAGE SOLUTION

If you're like most Model 100 or Tandy 200 owners, you've probably found more uses for your portable computer than you ever imagined. This is great, but it brings up the question of storage. Where do you keep all those great programs you write? All that important data?

Until today it's probably been on cassettes—a lot of cassettes. And cassettes are cumbersome, bulky and, well . . . slow. Now there's a better way.

Our new Portable Disk Drive (26-3808, $199.95) gives you fast access to 100,000 characters on 3 1/2" micro floppy diskettes.

A TRULY PORTABLE DISK SYSTEM

The Portable Disk Drive weighs just 1 3/4 pounds, measures only 2 × 4 15/16 × 6 1/8", and runs on batteries or optional AC adapter. It's small enough to fit into a briefcase along with your Model 100 or Tandy 200. Now you can have a full-fledged disk system wherever you go. Initialization software included.

It's perfect for use with your portable's built-in software. Now you can store and update large documents with TEXT word processing and keep easy-to-store micro disks filed and categorized as you need them.

Or, if you have the Tandy 200 with built-in Multiplan spreadsheet analysis (or the Multiplan ROM pack for the Model 100), it's easy to keep many different spreadsheets on diskette. They're available for comparison and update at any time.

REAL DISK DRIVE POWER

The Portable Disk Drive features easy menu-driven operation. The operating system lets you list the files on the diskette, and features FORMAT, SAVE, LOAD, KILL and RENAME functions. A disk access lamp lets you know that the disk is in use. Another indicator tells you when batteries are low. If they are, the unit will not function, but will finish a job in progress.

SPEED, SIMPLICITY, FLEXIBILITY

Now you can build your software and data library in a cost-effective manner. The micro diskettes are only $16.95 (package of 3), and cost even less when you buy in quantity. The choice is yours—but we've already stacked the deck. Step up to reasonable storage today!

Radio Shack®
The Technology Store™
A DIVISION OF TANDY CORPORATION
Circle 47 on Reader Service Card

New 1986 Computer Catalog! Send me a copy.

Mail To: Radio Shack, Dept. 86-A-110
300 One Tandy Center, Ft. Worth, TX 76102

Name _____
Company _____
Address _____
City _____ State _____ Zip _____
Telephone _____

Prices apply at Radio Shack Computer Centers and at participating stores and dealers.

RS-232 port. The cable has a 25 pin connector (DB-25) on one end and an eight pin plug on the other. Since the connectors are uniquely shaped and the ports clearly marked, there's no chance of connecting them incorrectly. In addition, they're rugged and should take the constant plugging and unplugging associated with a portable on the move.

Underneath the drive, there's a little compartment that contains a bank of four DIP switches. Nowhere in the manual does it say exactly what these do except that they all must be on to load the file management software — and they all must be off to run it. Tandy may have thrown them in to add some mild complexity to an otherwise simple installation procedure.

Thus, hardware installation involves little more than connecting the RS-232 cable between the two devices (and the AC adaptor if desired). Not intellectually taxing. And the software installation is no more difficult.

DO IT WITH YOUR EYES CLOSED

The system diskette contains file management programs that operate the disk drive. These must be loaded and remain resident in the laptop's random access memory (RAM).

The procedure to do this requires a three line program that can either be written in TEXT and then run from BASIC or simply entered and run directly.

Loading takes a grand total of 20 seconds. While the load is taking place, a message informs you of its progress. When it's complete, you're returned to the main menu.

The only addition to the menu is a file called FLOPPY.CO. It takes up 3423 bytes of valuable RAM. However, since it provides access to a far larger storage area, its size is of minimal consequence.

And that's all there is. Hardware and software installation takes all of about 15 minutes, if that. There's little chance for error except, perhaps, when keying in the load program. You also need to be sure there's enough free memory (about 8K of RAM) to run it.

Tandy Portable Disk Drive Specifications

Size (inches)	6.13 x 4.63 x 2
Weight	1.75 lbs.
Disk Size	3.5 inch
Disk Capacity	101.12K
Battery Life	2 hours
Transfer Rate	19,200 bits/sec.

SO WHAT'S IT DO?

Once loaded, operating the file management software is in keeping with the Tandy tradition. That is, it requires using little more than function keys.

To bring up the Disk File Manager you need only put the cursor over FLOPPY.CO and press Enter. The menu that appears is similar to a label line in TEXT. Each function key is assigned a particular disk operation.

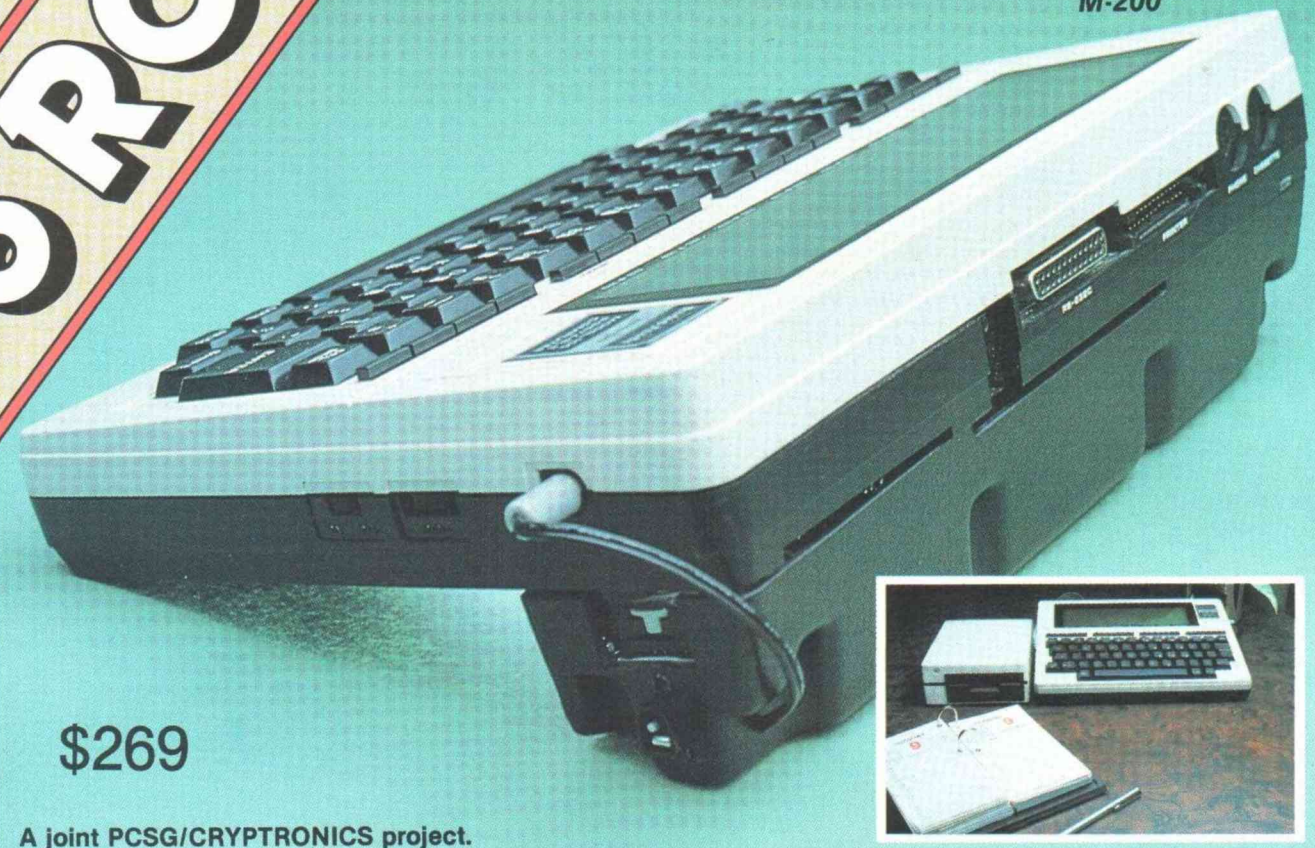
The menu display has a couple of nice features. One is a clock in the upper right corner which displays the same time shown on the main menu. The purpose for it is unclear, but it's a nice touch.

(continued on page 46)

The Tandy Portable Disk Drive is compact and provides 100K of storage on 3.5 inch disks. It's a good yet more expensive alternative to cassette backup.

6 ROM BANK

plus powerful Nicad battery pack that gives 30 hours of power to your Model 100



$269

A joint PCSG/CRYPTRONICS project.

Now you can access LUCID, DISK+, WRITE ROM, RAM+ and others instantly.

The 6 ROM BANK plus battery pack lets you have the ultimate Model 100 system. When you get your unit just press in up to 6 ROMS into the sockets then push in a simple plug into your Model 100's ROM socket. The ROM bank has two posts on either end that insert into the two little holes on the underside of your Model 100.

The ROM bank props up the Model 100 at the same angle and height as those little legs you've seen. The ROM BANK itself is only about 1½" deep and it runs the width of your Model 100. It only weighs one pound. It not only installs instantly, but it pops free in a second if you need everything to lie flat in a briefcase.

Change from ROM to ROM with the touch of a thumb switch.

You can go from LUCID to WRITE to DISK+ to any other ROMS just by turning the thumb switch at the side of the ROM bank. The 6 ROM BANK is a sturdy well built construction that looks like it is a part of your Model 100.

What is also fantastic is that the ROM bank has a powerful NICAD battery and recharger built right in. This power source supplies up to 30 hours of life to your Model 100 with just 6 hours of recharge. What's nice is that it recharges right from your Model 100's power adapter. This is a quick charge system and if you need power in a hurry, you can get 6 hours of life for your Model 100 by just charging for an hour and half.

Suddenly, the Model 100 is a very powerful computer.

If you have the HOLMES portable disk drive with its powerful bundled database software package or the CRYPTRONICS 128K RAM expansion along with LUCID, WRITE ROM and DISK+ in the 6 ROM bank with its rapid rechargable NICAD power source, you have the ultimate portable system. It's all available only from PCSG.

As usual we don't want you to take our word for it. The 6 ROM BANK is sold on a 30 day trial. If you are not satisfied simply return within thirty days for a full refund. MC, VISA, AM. EX. or C.O.D.

1-214-351-0564

PORTABLE COMPUTER SUPPORT GROUP

11035 Harry Hines Blvd. No. 207, Dallas, Tx. 75229

VISA / MASTER CARD / AM. EXP. / C.O.D.

Circle 32 on Reader Service Card

Direct from the North Pole Now Through January 15

Model 100 Nec 8201A Tandy 200

SAVE OVER 30%

Christmas Sale

Cleuseau was $95 **NOW $65**

Text Editor and BASIC Inspector. Amazing Edit functions. Overwrite. Search and Replace. Append to the Paste Buffer. Search Backwards. Repeat any function a specified number of times. Inspect your BASIC code. Renumber. Remove every unnecessary byte from your program with one command. Stop points and Print points to follow program execution. Show the GOSUB/RETURN Stack. Kill lines. Copy or Move lines, renumbering GOTOs, GOSUBs, etc. List lines with specific characteristics. A MUST FOR PROGRAMMERS.

ROM2 was $85 **NOW $55**

FAST Macro Assembler (300 lines per minute) and Symbolic Debugger (simulates 1000 instructions per second). Assembler allows User-Defined Macros. Conditional Assembly. Expression evaluation. Complete 8085 instruction translation. Complete error checking. Debugger allows memory inspection by name (label). Interactively execute and patch machine code. Single step, step into, out of and over subroutines. Set breakpoints and simulate up to them. Hex and ASCII memory dumps. The choice of most professional software developers.

Cleuseau + ROM2 was $145 **NOW $95**

Two amazing product together in one ROM. Save $25 when you buy both. A complete software development system.

Guardian call for prices

Put YOUR BASIC programs in a ROM. Completely customize your computer. Guardian is a service we provide. It seems too simple to be true. You send us up to 30K of .BA, .CO and .DO files on cassette or DVI disk and we will return to you any number of ROMs containing your software. No special programming. No restrictions. Your programs are completely secure; they cannot be listed, copied or altered in any way.

MasterCard and VISA - call to order

(907) 776-5529

Please add $4 shipping and handling

! ROM Software at Cassette Prices !

Plug in a ROM ten times faster than you can read a tape.

Polar Engineering and Consulting **P.O. Box 7188, Nikiski, Alaska 99635**

Circle 44 on Reader Service Card

PROGRAMMING FOR SUCCESS

Computers are part of the youth rehabilition program at Oregon's MacLaren School. Troubled teenagers with a history of delinquency and criminal activity are using Radio Shack TRS-80 Model 4 computers to "program for success."

Most of the 450 youngsters in the rehabilitation program are in need of general skills and have low self-esteem, according to program manager Rick Hill. Working with computers gives the teenagers new skills and self-confidence.

Teens are less likely to rebel against the computer than against an adult, said Dennis Ball, one of the school's counsellors. Experience with the machines teaches patience, supplies academic basics and provides new skills that are marketable in society.

The rehabilitation program currently uses 14 Model 4 computers donated by the Ray Foundation. The computers were selected because of Tandy's free teacher training and reliable customer support, Hill said.

If the pilot program in Oregon succeeds in assisting trouble youth in building more constructive lives, the Ray Foundation is planning to sponsor similar programs throughout the country.

New Tandy Customer Support

Tandy Corp. is bucking the tide by changing its computer customer support services — for the better.

Only months after Hewlett-Packard, like many other companies, replaced its free legendary HP-COACH service with a $45-per-call HP Helpline, Tandy has introduced its ATSO Program: Area Training and Support Operation.

ATSO provides regional customer support which far exceeds the level that individual computer centers were capable of. Under the old system, each store CSR (Customer Service Representative) was expected to be an expert in all Tandy computer products. The CSR had to be familiar with Model I TRS-DOS, Tandy 6000 XENIX, and the invisible Model 100 operating system. The same CSR also had to answer in-depth questions about Scripsit 100, Lotus 1-2-3 and the Model 4 accounting software.

Under ATSO, several support specialists work under the same roof. One specialist may concentrate on XENIX products; another may be an expert on across-the-board word processing.

Tandy established 63 ATSO centers, each in a major metropolitan area. The number and makeup of the support teams vary, but all areas should benefit under the new support program. Locations outside of these 63 ATSO centers will continue to have computer center CSR support, as in the past.

Along with ATSO, Tandy is offering several new services under its On-Site Customer Service system, providing enhanced store-based and on-site training and varying per-hour rates.

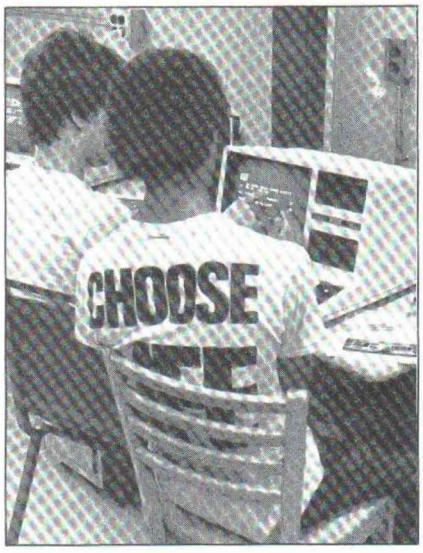
Professional Portables

Who uses portable personal computers in Big Business? Professional and individual users, according to the Newton-Evans Research Company (NERC).

The 300-page 1985 report, entitled "Microcomputer Usage Trends in 'Fortune' Corporations," indicated that 59 percent of portable-computer users were professionals. Thirty percent of the users were managers and executives. Only 11 percent of Fortune-owned portable computers were used by clerical staff.

These statistics are significantly different than those for desktop personal computers. Fifty percent of desktop computers in large corporations are used by professionals, and 32 percent are used by clerical staff. Managers and executives comprise only 18 percent of the user base.

The 300-page report is priced at $750, and is available from Newton-Evans Research Company, 10176 Baltimore National Pike No. 204, Ellicott City, MD, 21043, (301) 465-7316.



Oregon teens held at the state-run MacLaren School program for success on Tandy Model 4 computers to catch up on missed schoolwork and learn programming skills that will help them once they're released.

Plastic Displays

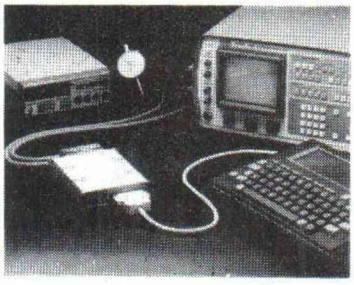
Polaroid Corp. has introduced a new, flexible plastic liquid crystal display (LCD) material. The shatter-resistant material is ideal for portable computer use.

Weighing only two ounces per square foot, the plastic LCD is one-tenth the weight of glass displays. It is also about one-tenth the thickness, measuring only 0.015 inch.

The flexible material can be curved to a radius of two inches, and can support pixel sizes as small as 0.010 inch. Shipment of the new plastic LCDs is expected in early 1986. □

Circle 29 on Reader Service Card

GPIB



GPNET model 10

- CPU Z8 Single chip controller (8 MHz)
- ROM 4KB RAM 2KB
- GPIB Controller NEC uPD7210
- RS232C I/O (300-19200bps)
- IEEE-488 bus connector
- GPIB function:
  SH1 AH1 T6 TE6 L4 LE4
  SR1 RL2 PP0 DC1 DT1
  C1 C2 C3 C4 C7
- Power Supply: DC.5V 450mA DC 12V 30mA
- 126mm w x 29 mm h x 151 mm l
- 18 oz. weight
- $350.00

Does not require specific OS
Only BASIC needed to support network

GPNET 12V Power Unit available

NICTRIX CORPORATION
26 Court Street
Brooklyn, NY
718-522-4941

Dealer inquiries invited

THE GREAT COMMUNICATOR

Work anywhere on your lap-size computer, then transfer files directly to your desk-bound micro. Or use your lap-size as a go-between to move files from one brand of desk computer to another.

All you need is HardWire©, the menu-driven program that speeds files between lap-size and microcomputers. Use it with any combination of the NEC 8201/8401, Radio Shack Model 100/200, or Epson Geneva lap computers with the IBM-PC, PC-compatibles, Kaypro, or Otrona Attache. Add a cable and go!

HardWire© program and easy-to-follow manual:

only **$39.95**

Specify MS-DOS, or Kaypro CP/M
Or get any two versions for just
$59.95.

VISA and MasterCard accepted.
To order or for information, call or write:

POMERLEAU COMPUTING SYSTEMS *of Hyde Park*
P.O. Box 337585
Chicago, IL 60637 (312) 667-2075

Call us for information on other lap-size computers.

Circle 53 on Reader Service Card

GIGO (from page 7)

is overseen by the Securities and Exchange Commission. There is another name for advocating raising venture capital by the means you propose. That name is fraud. In the case you propose, specifically, mail fraud.

Richard Soltes
Dallas, TX

We know of no current advertisers who cash checks or charge credit card accounts before a product is shipped. — Ed.

Regarding the editorial in your August issue, there is another alternative to advertising and promoting a product that only exists in the mind of the developer. That is advising potential customers that the product will be available at some future date and orders will be filled after that date.

I was recently "vaporized" by ads in your magazine about Write ROM by Portable Computer Support Group (PCSG). I sent in my money as soon as the ad broke. Six weeks later, I called PCSG and was told there had been a delay at the printer and they would be shipping in the next two weeks.

I waited four weeks and called again. I was told they were shipping and should have the program "soon." Another two weeks, another call and I was told, "Well, we haven't cashed your check yet."

That is all very nice and may clear their conscience that they have not misled anybody, but had I known Write ROM wasn't available, I'd have ordered Lucid which *was* available immediately. It had been my intention to order both programs but I wanted to try one before ordering the second. As a result of the "vaportalk" from PCSG, I am disinclined to deal with them again. They have lost their credibility with me. That is a very fragile commodity, easily lost, very difficult to regain.

An ad proposing a realistic shipping date and soliciting pre-release orders would have enabled them to test the marketing waters while maintaining their credibility.

I hope the industry will read your commentary and heed this letter and act with some responsibility.

C. E. Voigtsberger Jr.
Ventura, CA

PCSG admits they had production problems with Write ROM. When they booked advertising for the product in the March issue of Portable 100/200, we are told, they fully expected to be shipping by that time. Due to a variety of reasons, they did not begin shipping until May. They have been shipping steadily since then. — Ed.

I was appalled to read your Machiavellian column "The Waiting ROM" in the August, 1985 issue of your magazine. One can only assume that the bulk of your revenues derives from advertising and that, as a result, you are willing to participate in misleading your subscribers under the banner of furthering the growth of the industry.

I am pleased portables have been developed, but if such development can only occur in the context of widespread disception, I would just as soon live without them.

The only good news in your editorial is that magazine publishers are being held liable for fraudulent advertising in their publications. Because the computer industry is young or very important or whatever does not mean its promoters should be held to different standards than the rest of us.

I frequently order items on the basis of advertisements in your magazine. You can be quite sure that the first time I encounter the difficulties you mention I will file complaints with the U.S. Postal Inspector's Office, the Maine Attorney General, your trade association, and any place else I can think of at the time. If you choose to embrace the moral principals of profiteers, linking yourself to dishonesty as "industry advocates" who have to "fuel the entrepreneurial effort," then you should reasonably share the penalties our society wisely deals out to those who hold themselves above common decency and the law in the name of a so-called greater good.

Daryl B. Matthews, M.D.
Lihue, HI

LAPWORD HINTS

I think Lapword is the best text formatter for the NEC. The only problem I have is using it with XFILES.CO. It'll garbage everything up unless you first hide it with READY.BA (which is included with Lapword). However, if you have a printer code file such as EPSON.CO and accidently run it while Lapword is in the SAFE mode, then it'll crash that bank and necessitate a cold start.

What I've been doing is using MEMMGR.BA from Traveling Software to make EPSON.CO invisible. I then make Lapword "SAFE" which renames it L——.CO. Next I use the system menu to rename it as Lapword. Finally, I kill

SAFE.BA and, in Basic, clear 100,-7552. Now when I access Lapword, it uses the codes from EPSON.CO — no more crashes, no more cold starts.

John J. Gaudreault
Omaha, NE

LOOKING FOR HELP

I am currently doing a literature search on immunosuppression and its relationship to new malaria vaccines. I am collecting and abstracting data at the National Medical Library using my Tandy 200. Books cannot be taken out of the library so I do all the reading and abstracting there.

At home, I use an Apple II Plus and manually input the data from my Tandy 200 into a dBase II format. The process is very tedious since I don't know how to transfer the data directly from the 200 to the data base on my Apple.

I am sure there is a more efficient way to do this. Can you help?

Kay A. Buck
McLean, VA

One can connect a Tandy 200 to an Apple II Plus and, with a little tinkering, dump data to the Apple, convert it and load it into a data base, however, it is not recommended practice for immunosuppression researchers.

We'd suggest asking your local Radio Shack and Apple salespeople if they know of any software packages that might facilitate the process. Or you might consider using a database manager such as T-Base from Traveling Software and just use the 200 exclusively. — Ed.

FOOD FOR THOUGHT

About 10 months ago I became the proud owner of a Model 100 at which time I first heard of your magazine. Being the owner of another popular TRS-80 computer, the Color Computer, and having visions of all the good publications for the machine, I eagerly subscribed to *Portable 100/200*.

The first few months had a fair amount of programs to get me started. Each month thereafter your ads became repetitious, programs became scarce — many months had none at all. As if the multipage ads are not enough, you write reviews to fill the space that might contain an occassional listing. A publication so inclined to serve only its advertisers is usually called a catalog and is sent unsolicited and free of charge.

If by chance you find it in your power to cater to the Model 100 owners with some meat instead of scraps then I'd feel compelled to praise you as I now find fault.

It's a shame as the only other alternative is large phone bills and larger CompuServe bills to acquire listings.

Donald J. Briggs
Syracuse, NY

P.S. If you have the intestinal fortitude to print this letter, I'll eat each and every page in said issue that contains a useful program listing. I'll even do it in Camden, if you desire, on my next trip to Maine.

We've had similar letters from other readers and that's why we started Portable Program Review (PPR), a monthly newsletter providing a wealth of listings for our program-starved patrons. Portable 100/200 will increasingly include useful programs, but before giving up on us, you should give PPR a try. Besides, it might taste better. — Ed.

WRITE ROM REVIEW REVIEWED

About your Write ROM evaluation. Most I got was a critique of the manual with little to show someone really got into using the program. It was too general and did not really tell me why it is a good buy.

I used Write ROM for a month's trial and found the program excellent and the customer service the same — but it was just not cost effective for my needs. My TP100 does just as well at a third the price.

Arthur H. Sanfelici
Frederick, MD 21701

BUSINESS UTILITY SOFTWARE, WHERE ARE YOU?

I attempted to contact Business Utility Software to purchase their C compiler for the Model 100. The telephone number is answered by a recording with the usual "check your number and redial" message.

I would like to purchase the product (assuming it works). Could you provide additional information on the competence of the product and where it can be purchased?

Bennett D. Shulman
Lansing, MI 48915

We, too, were unable to track down Business Utility Software despite calls to the Better Business Bureau, California Board of Equalization, Secretary of State's Office and San Francisco's City Hall. We suggest you wait for someone else to come out with a C compiler.

(continued on page 68)

Circle 48 on Reader Service Card

AMERICAN TECHNOLOGIES INC.

PRESENTING THE...

VIZIFLEX SEEL™

FOR YOUR MODEL 100

only . . . **$21.95**

You can SEE through it!
You can TYPE through it!

A clear, super-tough, form-fitted, protective plastic cover for the Model 100 portable computer.

Provides functional protection from foods, liquids and harsh environments. A must for the serious Model 100 user.

Will easily pay for itself by helping retain the original condition of your investment.

Send check or money order, or add $1.90 for COD shipment.

123 South Jefferson • Marshall, Michigan 49068
(616) 781-3014

CHARGE ON!

NEVER RUN OUT OF BATTERIES AGAIN!!!

- Power Accessories for Model 100, M10, and NEC 8201
- Special CHARGE ON KIT comes with charging unit, battery holder (batteries not included), mounting material & special cables for use in car or home.

CHARGE ON KIT $24.50

Auto connection cables only $10.00
(allows portables to work off car battery only)

- Unit will not damage computer or auto charging system.
- No installation required or modification to computer

30 day money back guarantee
Add $3.00 for shipping & handling.
Make checks payable to:

CHARGE ON!
P.O. BOX 6087-C
ANAHEIM, CA 92806

MC/Visa also accepted
Allow 4–6 weeks for delivery.

Circle 67 on Reader Service Card

Conserving Precious Memory

Machine language programs often take up more room than is necessary. Understanding how they are stored can help reclaim otherwise wasted space.

By Jim Irwin

Are you confused about machine language program storage? If so, you aren't alone. But why should you care? Because you may be wasting a significant chunk of memory without even realizing it!

The portable computer family (Model 100 and Tandy 200, NEC 8201) manages machine language programs in a form different than BASIC or TEXT files. By understanding what computers do with machine language files you'll be able to maximize the use of your portable's memory.

BASIC and TEXT files are simple to understand. What you see is what you get. You are working on the file "in place" — the changes you make are entered directly into the file itself.

Machine language files are different. They can (and often do) reside in two places in your computer's memory. The result is a memory penalty equal to the length of the machine language program. Knowing this can help you avoid the memory penalty and perhaps recover several thousand "wasted" bytes.

To help understand where programs are stored, refer to the simple memory map in the table below.

User random access memory (RAM) is further divided as follows:

TOP: Space reserved by CLEAR command String Variables
Available RAM
Numeric Variables
PASTE Buffer
.CO (Machine Language) Storage
TEXT File Storage
BOTTOM: BASIC Program Storage

Memory map showing where programs are stored

ADDRESS RANGE	CONTENTS
MAXRAM-65535	Reserved for Computer's Use
32768-MAXRAM	User RAM (32K Machine)
40960-MAXRAM	User RAM (24K Machine)
49152-MAXRAM	User RAM (16K Machine)
57344-MAXRAM	User RAM (8K Machine)
0-32767	ROM Programming (BASIC, TEXT, TELCOM, etc.)

MAXRAM = 62960 Model 100
62336 NEC 8201
61104 Tandy 200

Essentially your programs and files grow upward in memory while your reserved space and string variables work from the top (MAXRAM) down.

A machine language program can be stored anywhere in user RAM. But to execute the program, it must be loaded at a specific address range. The address range required is determined by the person doing the machine language programming.

Most machine language programs are designed to run at the top of user RAM in the space reserved by the clear command. A typical example may be CLEAR 50,60000. This command "reserves" the area between 60000 and MAXRAM for your use. The computer has no idea of what you are going to put there nor does it care. It just knows that the space from 60000-MAXRAM is *not* to be touched. In fact, CLEAR is available specifically for the purpose of reserving space for machine language programs.

This identifies one area where machine language programs are stored — the area saved by using CLEAR. The other place where machine language programs are stored is shown in the memory map. It's the space between TEXT files and the PASTE buffer. Fortunately, no space is reserved there until you request it. To do this for the

(continued on page 53)

It's the Holmes Engineering/PCSG "chipmunk"

PORTABLE Disk Drive for the Model 100/200

NOW AVAILABLE ON M-200

$599
Includes a library of six powerful programs

Uses the main menu concept. You see the disk directory instantly, arranged on your M-100 screen like your main menu. Just move the widebar cursor and transfer files with a function key. You can run a file directly from the diskette with the ENTER key. Uses 3½" microfloppy diskettes that have a rigid plastic casing and a metal core. They're tough and nonflexible. You can carry several in a shirt pocket without damage. There's 358K on a diskette. Ten of these in your briefcase and you've got 3½ megabytes.

Drive weighs only three lbs. and it works directly from the 110 outlet and recharges at the same time. It recharges in six hours with thousands of pages transferred between charges. It's compact, with dimensions of 2¼" x 5½" x 7.5"; and fits easily into your briefcase along with your Model 100 or 200.

Machine code programs, BASIC programs, *Lucid* files and documents all are saved and retrieved with no protocol–instantly, ready to run.

In a special association, Holmes Engineering and PCSG have worked together combining the hardware knowledge of Holmes and the software expertise of PCSG. The result is a product that can only be regarded as excellent.

You see the disk directory instantly; works just like the main menu

Here is what is really exciting. The portable disk drive has Random Access. Included as part of the operating system in the drive (ROM) is a very powerful disk BASIC.

This means that you can have BASIC programs that will access the diskette and read and write records directly on the diskette.

Just imagine yourself with this kind of capability.

Database – The portable disk drive stores your mailing list, inventory items, part #s and descriptions or any other data that you need to recall.

358K on a diskette

Invoice (purchase order) – At the touch of a button you can print out your sequentially numbered, professionally done invoices. This is truly professional invoicing capability.

Purchase orders are just as easy.

Sort – This excellent utility allows you rapid sorting of any records you have compiled. You can write the newly sorted list back in the same file on the diskette or to a new file.

Telecom interface – If you are a user that likes to access other computers or databases (for example CompuServe) by telephone then this powerful facility alone is worth the price of the disk drive. You can automatically download and upload information onto the diskette.

Calendar – Everyone who has seen this program has said, "This is the first calendar/diary/scheduler on any computer anywhere that I can use. It is so functional."

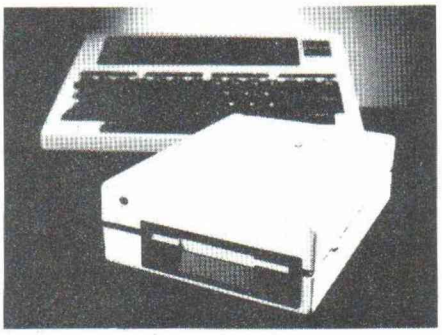
The calendar program is usable for two reasons, first it is designed correctly, and second you have the memory (358K) on the diskette to log and access a tremendous amount of notes over a long period of time.

Personal Finance Manager – This wonderful program truly lets you keep track of your finances.

All your records are kept on the diskette. Bank accounts (checking and savings) and charge accounts such as MasterCard and Visa.

We at PCSG believe we have the ultimate Model 100 system, the Portable Disk Drive plus the *Lucid* spreadsheet on snap-in ROM, *Write ROM* word processing and the new 64K RAM expansion now available from PCSG.

We want you to find out for yourself at no risk. If you aren't totally satisfied within 30 days, simply return the disk drive for a full refund. Priced at $599.95, including the software library. MasterCard, Visa, COD.



PORTABLE COMPUTER SUPPORT GROUP

1-214-351-0564

11035 Harry Hines Blvd., #207
Dallas, Texas 75229

PCSG offers a 30-day/money-back trial!

Circle 37 on Reader Service Card

SOFTWARE LIMITATIONS: DARK CLOUDS AND SILVER LININGS

The most troubling inadequacy of Tandy's new drive isn't the drive itself, but its sequential-access operating system. The software limits the drive's usefulness to that of a high-speed cassette instead of providing the full random-access functionality associated with most microcomputer disk drives.

The distinction is more than academic. It has immediate and important consequences for buyers.

LIMITATIONS AND CONSEQUENCES

Say you've written or purchased a program that maintains a 100-name mailing list for your business. The mailing list is stored alphabetically in a database that contains 100 records — one for each person on the list. Each record contains a number of fields: name, street address, city, state and so on.

Suppose now that you want to view, change or print the address of one of the people on the mailing list — *John Smith*. It's here that the Tandy drive's unwieldy operating system begins to present obstacles.

Most disk operating systems allow the computer to calculate the physical location of John Smith's record, position the drive's read/write heads at that location and read the record into memory for subsequent display, modification, printing or whatever. If the user chooses to modify the information, the software writes the new data onto the disk in precisely the same location.

With Tandy's portable disk drive, the user must load the *entire* 100-record database into random-access memory (RAM) before the mailing list program can find the desired information. If modifications are made, the user must transfer the entire file back onto the diskette.

As you might imagine, this is quite a time-consuming process, particularly since the drive requires about two seconds to start the motor spinning and position the read/write heads, and then transfers data at just 19,200 bits per second. (This slowness is in turn attributable to another incomprehensible aspect of the drive's design: It connects to the computer via the RS-232 serial port in-

NEC *Starlet*™ MEMORY SYSTEMS

3½" FLOPPY DISK DRIVE $395
- 300K USER CAPACITY, CP/M FORMAT
- COMPLETE 8431A EMULATION
- FAST SINGLE/DUAL DRIVE FILE BACKUP AND COPY PROGRAM
- DISK/DRIVE VERIFY PROGRAM
- COMPACT: 2.2" x 4.1" x 6.4"
- POWER AUTOSWITCHED FROM STARLET
- SUPPLIES DC POWER TO STARLET

128K DATAPAC® CARTRIDGE $179
64K DATAPAC® CARTRIDGE $119
- 3 YEAR, USER REPLACEABLE BACKUP BATTERY
- 32K VERSION, 8401A OR 8201A **$89**

8K MODULE FOR MODEL 100 8201A AND M-10 $25
- Thousands sold, easy installation

NODE POLICY:
- 30 day money-back guarantee
- 12 month warranty — 3 day air service
- Free UPS 2ND DAY AIR shipping
- Quantity discounts start at 3 units

PAYMENT: VISA OR MASTERCARD, Checks held 14 days, C.O.D. add $2, California residents add 6% tax.

VISA MasterCard

Call for immediate delivery (408) 462-3773

NODE COMPUTER SYSTEMS

720 CAPITOLA AVE., BLDG. D
CAPITOLA, CA 95010

STARLET™ is a registered trademark of NEC

Circle 31 on Reader Service Card

PROMPTEXT, The Prompted Text Writer

PROMPTEXT — for Radio Shack Model 100 users who do repetitive information gathering — the kind requiring standard headings or data field labels that go into the file always in the same order. It's for any standardized data gathering — surveys, logs, medical records, scientific measurements, diaries, customer info —you name it.

PROMPTEXT eliminates the tedium of typing headings or field labels over and over again in TEXT mode and the possibility of forgetting something. The program supplies prompts you have previously created. Each time you enter your response, both the prompt and the response are stored in the destination file. The stored prompts provide convenient "handles" for data retrieval and data processing.

A single keystroke then takes you directly into TEXT mode so you can add comments or make changes. Three keystrokes take you back to PROMPTEXT to continue. Other single keystrokes give you such handy information as the time and the amount of memory left. And one keystroke takes you into TELCOM to upload your file to another computer.

How much is it? Only $39.95 plus $3.00 for handling and postage, check or money order.

Life Sciences Editorial Software
3604 Bel Pre Road
Silver Spring, Maryland 20906
(301) 949-4226

Circle 18 on Reader Service Card

stead of at the system bus located under the panel on the bottom of the computer.)

This requirement that the Model 100 or Tandy 200 load the entire file into RAM entails a second important functionality tradeoff: It limits file size to the maximum that will fit into the computer's RAM.

Let's use our hypothetical 100-record mailing list as an example. Suppose your portable computer has made your business so successful that you now have 1,000 names to enter. There's probably room for them all on the disk. But the Model 100 is limited to 32 kilobytes (K) of contiguous memory and the Tandy 200 has just 24K. Despite the drive's 100K capacity, it's impossible to work with the mailing list.

It gets worse. The original 100-record database is probably about 10K long. You store the database on a floppy disk, delete it from RAM, and write a memo or two with TEXT. Then you go to retrieve the mailing list and receive an error message. Why? The new memos have left you with less than 10K of free RAM space. Tandy's manual for the portable disk drive says this isn't a problem, that you can just go into BASIC and KILL some of the data files. (It's probably a better idea to store them on one of the extra formatted disks you keep around for emergencies like these.) In either case, the manual is wrong. It *is* a problem.

IN SEARCH OF SILVER LININGS

Given its low price, battery-powered operation and convenient portability, Tandy's portable disk drive is likely to find a wide audience. It should: The price/performance ratio is agreeable and the drive is far superior to the slow, awkward cassette drives it is intended to replace. Its 100K capacity, though unimpressive in light of the 360K drives available from Portable Computer Support Group and Personal Integrated Computers, is sufficient for most of the tasks you'd choose to perform with a 32K portable computer.

The main obstacle is the operating system, which limits the unit's uses to the same tasks you'd perform with a cassette drive.

It's the operating system, too, that has the greatest potential for change. Tandy's portable disk drive isn't inherently less flexible than other drives. It's perfectly capable of performing random-access read and write operations under software control. A new operating system written in BASIC or machine language could do much to remediate the drive's limitations.

Such a project is underway. Portable 100/200 is sponsoring the development of a new operating system that will add complete disk drive control to all of Tandy's portables. Reader suggestions will be translated into software features. Portable 100/200 will solicit improvements from the reader community. The bare-bones code will be published in the magazine, followed by a complete listing of the final implementation. A new standard will be available for software and data distribution. The operating system will be contributed to the public domain and distributed to readers via 3.5-inch diskette.

With the assistance of the user community, Tandy's portable disk drive can have an important influence in the continuing evolution of portable computer applications.

—J. D. Hildebrand

PORTABILITY

$59.95
(Add $2.50 shipping & handling per case in the continental U.S., Alaska & Hawaii add $3.50)

MADE COMPLETE

The **Chip-Tote™ PCD-1** *makes your TRS-80 Model 100, 200 or comparably sized briefcase portable truly complete. It's the first lightweight soft case that doubles as a desk.*

The **Chip-Tote™ PCD-1** *is constructed of rugged Cordura® nylon and our special closed cell foam, so you can be sure your computer and its accessories will get the maximum in protection. So next time don't leave the office behind — carry it with you!*

YES, send me: ____ PCD-1(s) in ____ Black ____ Smoke Grey
Name _____ Phone (____)_____
Address _____
City _____ State _____ Zip _____
Signature _____
☐ CHECK/MO (CA res. add 6% tax) ☐ C.O.D. (Add $1.65)
☐ M/C ☐ VISA _____ Exp. _____

KANGAROO VIDEO PRODUCTS, INC.
10845 Wheatlands Ave., Suite "C" • Santee, CA 92071-2856 • (619) 562-9696
ENGINEERED CASES FOR SENSITIVE ELECTRONIC EQUIPMENT

Circle 24 on Reader Service Card

TRS-80™

SAVE SALES TAX *PLUS DISCOUNT
*TEXAS RESIDENTS ADD ONLY 4½%

TANDY 200-72K

FORT WORTH COMPUTERS
WE ARE SERIOUS ABOUT SAVING YOU MONEY
(Located 30 miles from Fort Worth)
377 PLAZA • GRANBURY • NR FORT WORTH, TEXAS 76048
CALL FREE: 1-800-433-S-A-V-E
Monday thru Friday - 9:00 a.m. to 5:00 p.m.
(Order inquiries/Customer Service &) IN TEXAS: 817-573-4111

Circle 20 on Reader Service Card

Circle 7 on Reader Service Card

LAPSTAR

60 columns by 10 lines

The WORDSTAR* like text processor that lets your M100 NEC8201 display 55% more text on the screen than before. Plus gives you many more text entering and editing commands than TEXT. *Now with free text formatter included.*

Now! Available **NEC 8201** version N

CISS CORP
3780 Manor House Drive, NE
Marietta, GA 30062
(404) 992-2200

ONLY **$74.95**

*WORDSTAR is a trademark of Micro-Pro Inc.

For 16k and larger machines.

Axonix PACKS

PERFORMANCE IN YOUR PORTABLE

ThinPack™ Battery/A.C. Powered Peripherals include:

PRINTERS
ThinWrite: Dot matrix impact — 40 and 80 column models
ThinPrint: Thermal dot matrix — 40 and 80 column models
ThinType: Impact letter quality — 80 column model

DISPLAY SYSTEMS
ThinView: 80 x 25 LCD intelligent display terminal
ThinE/L: Electroluminescent backlight for Model 100
ThinVid: Video interface for Model 100/200

MASS STORAGE
ThinDisk: 3½" drive — compact, battery-powered
ThinStore: Microcassette data and oral dictation storage

INTERFACES
ThinI/L: HP (82166A) HP-IL parallel interface converter
ThinMac: Macintosh to parallel printer interface
ThinCom: Serial interface for Async, Bisync, SDLC, Protocols

ACCESSORIES
ThinChargers: Automobile and foreign current adapters
ThinPower: Add-on rechargeable battery packs (solar optional)

SYSTEM INTEGRATION SERVICES
Axonix provides custom design and packaging services for application specific requirements

FOR MORE INFORMATION, CALL
(800) 821-7093 or (801) 582-9271

Axonix
The Portable Peripherals People
417 Wakara Way
Salt Lake City, Utah 84108

DISK DRIVE

The other is a running count of the number of bytes free in RAM. This is important when loading several files from diskette or making a disk backup. Although the file manager won't permit you to load files larger than free RAM, it's nice to know what you have to work with when copying several files.

There are eight commands available on the Disk File Manager, one for each function key. They are listed on the menu as follows:

F1: Files	F2: Load
F3: Save	F4: Bkup
F5: Kill	F6: Name
F7: Format	F8: Menu

The Files command gives a directory listing of the files on the current diskette. Files are listed alphabetically (left to right) in two columns. File size is also listed as well as the amount of bytes free on the disk.

Depending on your computer (Model 100 or Tandy 200), either 12 or 28 files will be displayed. If there are more, hitting any key will show the rest. The next key you hit returns you to the menu.

There is a limit of 40 files that can be put on a diskette. Under normal circumstances this wouldn't cause any undo hardship. However, given that each diskette has a capacity of 101.12K bytes, it's conceivable you could reach the file limit and leave a lot of unused disk. In essence, wasted space.

The Load command, as it implies, loads files from disk to RAM. It's a very simple procedure. Type in the name of the file you want to load and what it will be called on RAM, press Enter and over it goes.

The PDD's data transfer rate is 19,200 bits per second. To the computer layman that may seem fast but in actuality it doesn't break any speed records.

ONE AT A TIME

One of the drawbacks to the load program, and indeed to a few others to be mentioned, is the inability to work on more than one file at a time. When loading is complete you're told to hit any key. This returns you to the file management menu where, if you want to load another file, you have to access the load command again.

Of equal obnoxiousness is being bounced back to the menu if you mistype the name of the file you want to load from disk. For example, if you misspell its name or leave off the extension, you'll be told the file wasn't found and the next key you hit will put you back at

Circle 3 on Reader Service Card

the starting gate.

Obviously these are more nuisance features than flaws. But it would be more purposeful and quicker if you could finish what you set out to do without having to start all over again.

The Save command works the same as Load, but in reverse. Again, you're asked to enter the file name on RAM and what it will be called on disk, hit Enter and away she goes. For what it's worth, it took 14 seconds to save a 5K byte file. That time increased by a few seconds depending on how full the diskette was.

Again, all the features of Load, good and bad, hold true for Save.

Bkup allows you to copy the contents of one disk and put them on another. Essentially, instead of loading files from disk and then saving them to a new one — one at a time — this command lessens the monotony by doing all of it for you. Except of course, swapping diskettes.

How long this procedure takes is directly proportional to how much space is available on RAM. If you have a full disk and only 5K free on RAM it's going to take about double the time (and twice as many disk changes) as if you had 10K free.

The Kill command erases a file name from diskette so the file can no longer be accessed. It's similar to the Kill command on the main menu of the Tandy 200.. You're given the option to kill or not to kill — if you opt for yes, it's gone for good.

Name is a command that allows you to rename files. It prompts you for the old file name and then the new. If you use a file name that already exists, you'll be informed. Unfortunately, it doesn't give you the option of selecting another name. Instead, it takes you back out to the menu.

Format is self explanatory. It formats a diskette. Since everthing on the diskette is wiped out during the process, you're told if the disk contains data and asked if you want to continue. It's a nice safety feature.

If you decide to go ahead and format, it'll take about 100 seconds which, again, doesn't break any speed records.

The last command is Menu, which returns you to the main system menu.

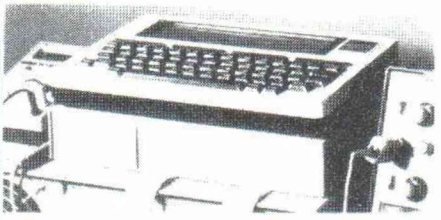
THAT'S A MANUAL?

Doesn't the word manual spark visions of a looseleaf or ring binder so big that if dropped on your toe, you'd be laid up for weeks? Wordy writing and poor editing aside, manuals are typically verbose — overflowing with trite and trivial ramblings about a product's importance to society. Mixed in, of

Circle 19 on Reader Service Card

DATA ACQUISITION & CONTROL

Batttery powered interface for the Model 100. Gives Analog and Digital I/O capabilities to your Radio Shack, NEC or Epson. Whether in the lab or in the field, Data Acquisition and Process Control are now more affordable than ever. Easy to program using BASIC input and output statements. Systems from $549.



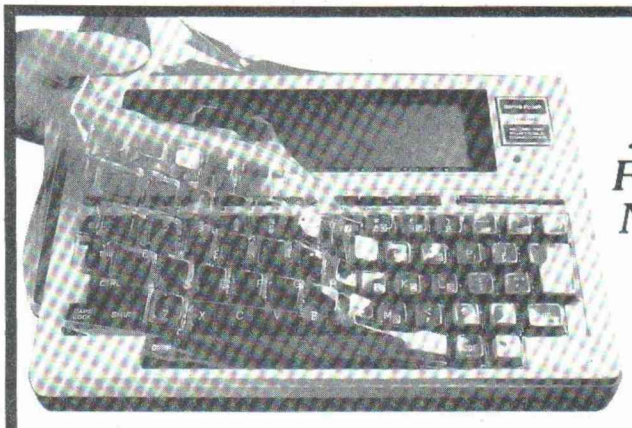
- Expansion boards available:
  - High Accuracy 12 Bit Analog I/O
  - Digital I/O–Counter/Timer
  - Combination Analog & Digital I/O
  - Relays, TRIACS, Opto Isolator, Thermocouple, etc.
- Serial Interface available–communicates with any computer. (IBM, Apple, etc.)

Complete PL-100 System includes:

- Expansion Chasis (holds 3 boards)
- Combination I/O board with
  - 16 Channel 8 or 12 Bit A/D
  - 4 Channel 8 Bit Analog Output
  - 4 Analog Level Sense Inputs
  - 16 Bits Digital Output
  - 16 Bits Digital Input
- Battery Charger / AC Adapter
- 2 Empty expansion slots
- Interface Cables
- Uses rechargeable batteries
- Provides power to the computer

Call the factory.

ELEXOR ASSOCIATES
(201) 299-1615
P.O. Box 246,
Morris Plains, NJ 07950



NEW!
For Model 100
NEC PC-8201

SafeSkin™ KEYBOARD PROTECTOR

Finally! A keyboard cover that remains in place during use!

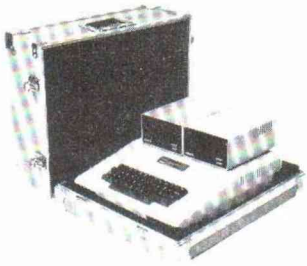
SafeSkin prevents costly downtime and repairs due to liquid spills, dust, smoke, cigarette ashes, paper clips, staples and other environmental hazards. **SafeSkin** is made of ultra-thin, ultra-tough, clear flexible plastic, molded to fit every key and contour, allowing normal key response and feel. This custom fit cover is easily removed for cleaning and gives years of dependable service. Available for the **Model 100, NEC PC-8201, IBM PC, XT, AT, Apple, C64** and many other popular computer models. Send 29.95, Check or M.O., Visa & MC include expiration date. Specify computer type. Dealer inquiries invited. Free brochure available.

MERRITT COMPUTER PRODUCTS, INC.
2925 LBJ Fwy., Suite 180 / Dallas, Texas 75234 / (214) 942-1142

Circle 27 on Reader Service Card

Circle 62 on Reader Service Card

PROTECT YOUR APPLE . . .



IN A CABBAGE!

Now, take your computer with you anywhere you go . . . completely protected . . . in a custom-designed case by Cabbage. Any brand . . . including any peripheral hardware. We design . . . just for you.

Unsurpassed quality and craftsmanship . . . that's a Cabbage!

Best Protection for . . . Anything!

- Audio-Visual Equipment
- Electronic/Optical Equipment
- Computers
- Musical Instruments
- Medical Equipment
- Scientific Instruments

CABBAGE CASES
2458 Wood Avenue
Columbus, Ohio 43221
(614) 486-2495

"Nothing's Tougher . . . Than a Cabbage"

Tandy 200/100 Software

- **Loan Manager** **$19.95**
  —Computes regular payments of a loan, term of a loan, remaining balance, last payment, annual interest, principal, amortization tables
- **Investment Manager** **$24.95**
  —Computes future values of investments, savings, annuities & much more
- **Graph Pak** **$19.95**
  —Plots data from a text file or you can enter data as you work, line graphs, bar graphs & pie charts, also a mailing label program & a print formatter are included
- **Basic Pak** **$19.95**
  —Basic program debugger, program packer (to conserve memory), renumber, rename, listing formatter
- **Ram Pak** **$19.95**
  —Memory dumps, disassembler, hex/decimal conversions

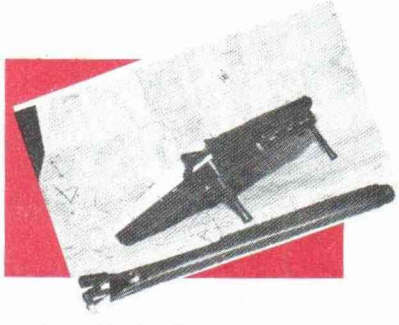
These menu driven programs come with clear, concise documentation which is written in English—not *computerese.*

Check—Money Order—C.O.D.
N.J. Residents add 6% sales tax
Add $2.00 shipping & handling

Data Transfer, Inc.
306 Rancocas Blvd.
Rancocas Woods, NJ 08060
609-234-6506

POWER-100
POWER-200

THE **BEST** IN **BATTERY** TECHNOLOGY



- 60 day money back guarantee — love it or return it!
- Recharge with Standard AC adapter — No extra recharger needed!
- Attaches securely to computer — Nothing extra to carry
- Computer still fits in case with batteries attached — As portable as ever
- Recharge while in use — No Downtime!
- Powers NEC, Olivetti, Chipmunk, and More!
- Normally pays for itself in a few months!

FEATURES

		POWER 100	POWER 200
RUN TIME:	MODEL 100	10 HRS	13 HRS
	MODEL 200	8 HRS	11 HRS
WEIGHT:		5 OZ	7 OZ
LENGTH:		10 IN	10 IN
RECHARGE 50%:		4 HRS	4 HRS
RECHARGE 100%:		16 HRS	16 HRS
PRICE:		$39.95	$49.95

CALL 1-804-794-6675
or write to:
A.R.M.S.
12131 Old Buckingham Rd.
Midlothian, VA 23113

Circle 5 on Reader Service Card

DISK DRIVE

course, are directions on how to operate the bloody thing.

Tandy's manual for the portable disk drive in no way fits this mold. It's a 26 page softcover pamphlet. Regardless of the simplicity of the product, manuals less than 30 pages tend to be on the vague side. This one is no exception.

It seems that Tandy assumes a PDD user is familiar with computers and has used a disk drive before. There'll still be unfortunate novices who'll get left in the lurch. Explaining how it works just isn't enough — tell *why* it works or what you can use it for.

Despite these philisophical criticisms, the manual is clear and concise — for what it has to say. It does provide operating instructions on how to avoid machine language conflicts with FLOPPY.CO, a description of error messages and the PDD schematic.

CASSETTE DEJA VU

To fully evaluate Tandy's portable disk drive one should put it in a proper perspective. Was it developed to compete with Chipmunk and the PIC Disk or to replace the antiquated cassette player? After using it, it's readily apparent the latter is true.

The PDD really does nothing more than a cassette backup. It does it faster, better and easier but that's not the point. Tandy has just reinvented the wheel (with minor improvements). For what it does, is it really worth the extra cost over cassette? That certainly has to be considered by the potential buyer.

But say you're sold on diskette drives. You're sick and tired of battling with cassettes. Then how does it compare to others on the market?

Well, it loses in speed, storage and functionality tests. Other disk drives store more data per diskette and have some pretty sophisticated operating system software that increases the drive's usefulness. For example, other units provide random access of data files and the ability to run programs from disk. But the PDD either wins or comes in a close second on price, portability and ease of use. So it all depends on what you want to use it for.

If you want a simple backup device, then look into the portable disk drive. But if you need something to increase the capabilities of your portable, the PDD is going to fall short.

It's a good start but there's room for improvement. □

Please help us rate this article's value. If you've found it very valuable, circle 176 on the Reader Service Card. If it was moderately valuable, circle 177—and if it wasn't valuable to you, circle 178.

REVIEWS (from page 31)

(including Chipmunk — more on that later) or to cassette. RAM-Pal's function keys also enable you to run a program, rename or kill a file, or append one file to another.

Changing the operation of various function keys has been reduced to its simplest form with SETKEY.BUD. The program prints out the current key settings and asks which key you wish to change. You then type in the appropriate commands, up to 15 characters, such as *KILL "* or *RUN "Type+.BA."*

For commands like the latter, SETKEY asks if you want to terminate the assigned string with Enter.

Since most users no doubt have a variety of function key formats for various purposes, another program, KEEZ.BUD, allows you to save as many sets as you want, each with an identifying extension, such as KEEZ.WRT, KEEZ.TYP and KEEZ.DVI. KEEZ.BUD resets all function keys to default, but adds EDIT and CLS to the normally unused F6 and F7 keys.

One final program tossed in with a certain degree of tongue-in-cheek is TIMER.BUD, which the manual describes as good for darkrooms, boiling eggs and timing game moves. Basically, it turns the Model 100 screen into a countdown timer, sounding an attention-getting tone on reaching zero.

THE BOTTOM LINE

Perhaps the most disappointing thing about Disk-Buddy is that it is incompatible with the Chipmunk portable disk drive from Holmes Engineering/PCSG.

There are — or no doubt soon will be — far more Chipmunks out there than DVIs, but the Chip just won't read the D-B programming. Auxiliary programs such as RAM-Pal can be used with it, though the user does not have the control over file transfers available with Chipmunk's own software.

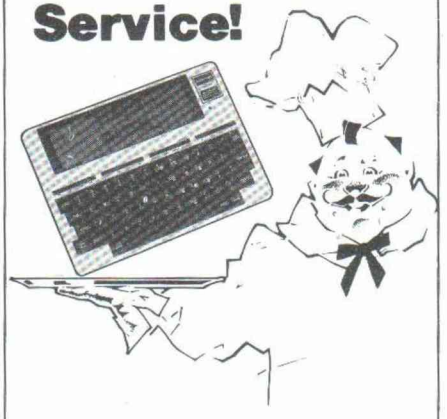
The real winning combination would be Disk-Buddy and a low-cost monitor interface and disk drive. Someday, no doubt.

As for the here-and-now, the ads for Disk-Buddy claim it will let you "civilize the Disk/Video Interface, make savage the Model 100." Well, a bit of license is expected from advertising copywriters. What Disk-Buddy *does* do is provide control over disk files and simplify file transfers — with or without a DVI — without threatening the integrity of your original files.

As for civilizing the DVI — keep your whip and gun handy.

Circle 16 on Reader Service Card

Southern-fried Service!



For technical expertise and service that's faster than butter melting on a mess o' grits, you can't beat the "Delker Difference."

We're not just whistlin' Dixie. When it comes to **TRS-80** computers, we mean serious business.

Y'all write or call:

DELKER ELECTRONICS

DELKER ELECTRONICS, INC.
P.O. Box 897
Dept. P1
408C Nissan Blvd.
Smyrna, TN 37167
800-251-5008
800-545-2502 (Tennessee)
615-459-2636 (Tennessee)
615-254-0088 (Nashville)

Circle 23 on Reader Service Card

8K RAM MODULE $25

FREE
- Ramtest software and
- Prop Legs with order
- Shipping

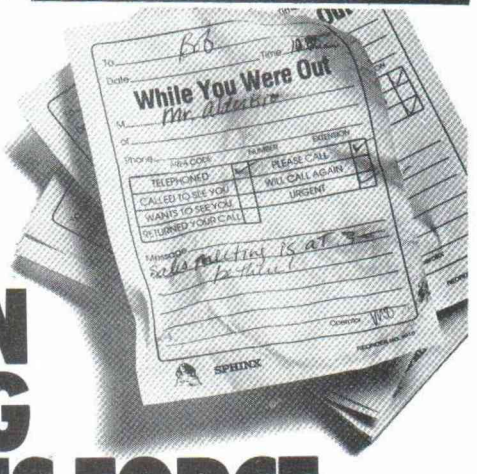
ULTRA LOW POWER
Cmos design

Easy step by step
installation instructions
1 YEAR WARRANTY
MC VISA COD MO ship same day
$25 each or 3/$70

WE SERVICE WHAT WE SELL
HOBBYIST SPECIAL: Kit form
all parts except 6264LP $16

ECONOMY COMPUTER CONCEPTS
Box 2047, N. Babylon, NY 11703

Voice: 516 587 6947
24 HR MODEM LINE: 669 4764
300 Baud 7 Bit No Parity



A COSTLY MISTAKE IN MANAGING YOUR SALES FORCE.

You call. He's out.

He calls back. You're out.

You can lose hours that way—and countless sales.

That's why you need MCI Mail.® It lets you use your PC to contact your sales force directly anytime of the day. Send and receive messages instantly. Or get sales forecasts and competitive information.

MCI Mail makes your sales force more productive so they can close more deals. And boost your bottom line.

Call 800-MCI-2255 or in Washington, D.C., 833-8484 and increase your profits instead of increasing your phone bill.

MCI Mail
NOW IS THE TIME FOR MCI MAIL.

© 1985 MCI Communications Corp. MCI Mail® is a registered service mark of MCI Communications Corp.

Circle 64 on Reader Service Card

Order of Sorts

Sort
Sorting utility
Custom Software
1308 Western Ave.
Wellington, KS 67152
(316) 326-6197
Circle No. 144

By CARL OPPEDAHL

My book about the Model 100 had just been typeset. I needed to get index information to my publsher pronto.

The index is always the last section of a book to be completed. That's because you can't start it until the book's been laid out, so you know where each term will fall. By the time I received pages to work from, I had one day to turn it around. I needed a good sort program to help me out.

ORDER OUT OF CHAOS

Custom Software's Sort utility is a machine language program that's fast, versatile, memory-conserving and easy to use. It runs on the Model 100, Tandy 200 and NEC PC-8201.

From the point of view of Sort, a .DO file is composed of records, each of which has been terminated by typing the Enter key. The resulting carriage-return, line-feed sequence appears on the screen as a small triangle pointing to the left. Each record is considered to be composed of fields, each separated from adjacent fields by a separator character. You can decide for yourself what character will serve as the field separator.

When running Sort, you specify the filename, the separator character that's to be used, the field number (from one to 255) and the type of sort (ascending or descending). Most BASIC sort programs read the file to be sorted into an array, thus consuming a lot of random access. memory (RAM). Sort, however, sorts the .DO file right where it sits in RAM. As a result, the .DO file can be as large as 27K.

Another nice feature of Sort is that neither the records nor their fields need be of uniform length. Some sort programs require all records be the same length, or that the sort field be at a constant column-wide location within each record.

Sort is shipped on a non-copy-protected cassette. A relocating loader is provided so the Sort program can reside above or below other machine language programs. Because Sort doesn't use RAM hooks, there is no need to remember to reset them. Assuming you run it only directly from tape, or by selecting it from the main menu, you needn't have the usual machine-language worry about accidently destroying all your files.

The six page manual properly opens with a discussion of the precautions that must be taken if Sort shares memory with other machine language programs. The section describing how to actually run the program is correct though brief. An example or two would be helpful to the new user.

After going through all the pages of my book, I ran Sort, specifying the search should be performed on the first field. It didn't matter which character I used as a field separator, but I specified a tab. The whole file sorted in just a couple of minutes. My publisher had his index in less than 24 hours.

Custom Software's Sort utility is a good, competent program. And at $19.95, it's a bargin. □

"It transforms a rough draft notebook into an elegant machine for generating professional-looking final copy. There is nothing else on the market that comes close to it for speed, size, and power. At $49.95 plus $2 shipping, it is an incredible bargain." —PC 8200 User Monthly

NEW LAPWORD™
WORD PROCESSOR FOR
MODEL 100 • MODEL 200 • NEC 8201

Program features: Graph mode, Mail merge, Hanging indents, Page numbering, works on any printer. More than 30 features. 3,240-3,297 bytes.

TO ORDER:
Send check or money order for $49.95 plus $2 for shipping and handling to The Covington Group. Visa and MasterCard accepted. No purchase orders. N.Y. State residents add local sales tax.

VISA MasterCard

The Covington Group
310 Riverside Drive Suite 916
New York, NY 10025
(212) 678-0064

Model 100 and Tandy 200 use SAVEM in the form SAVEM "name", Start Address, End Address, Entry Address. For example: SAVEM "TEST", 60000, 62959, 60173.

For the NEC 8201 use: BSAVE "name", Start Address, Length, Entry Address. An example in this case would be: BSAVE "TEST", 60000, 2960, 60173.

These commands make a copy of whatever happened to be at 60000-62959 and store it between your TEXT files and the PASTE buffer. The commands *do not* clear out the area from 60000-62959. That information is still there.

You now have two copies of the same information. The copy in between TEXT and PASTE is not executable but *can* be accessed from the main menu. The copy at 60000-62959 is executable but *cannot* be accessed from the main menu. And you thought you were confused before you started reading this.

If you have saved a machine language program using the SAVEM or BSAVE command, then a .CO file will appear on your main menu. When you place the cursor over that file and press Enter, your computer will try to copy the data from the TEXT-PASTE area into the 60000-62959 area. (Those addresses are arbitrary but correspond with the example).

If you haven't cleared that area, then your computer will beep and not load the program. So, in order to load a SAVEM or BSAVE program, you must have the necessary space reserved in user RAM. Again, this takes twice as much space as the program itself.

Every problem has a solution, and this one is no exception. The key is to leave the executable copy in the cleared space and then SAVEM or BSAVE just *one* byte. Typically, the best byte to save is the entry byte. Our previous examples would then be: SAVEM "TEST", 60173, 60173, 60173 and BSAVE "TEST", 60173, 1, 60173.

By trying this you'll find that saving one byte actually takes seven bytes. The computer uses six for overhead plus however many bytes you save. Thus, seven bytes are placed between TEXT and PASTE instead of the 2966 used previously. You just saved 2959 bytes!

There are times when you will need to save entire machine language files rather than just one byte. If you have two or more programs that compete for the same space, then at least one of them must be saved completely while the other is in use. On the 200, Multiplan won't run unless the top of user RAM is available for it. So you can't keep a program there permanently and still use Multiplan.

The important thing to remember is that machine language programs can be stored in *two* places in your computer. If they are stored in both places, you are wasting precious bytes. You can save bytes if you follow these guidelines:

1. If a program is stored in cleared space, SAVEM or BSAVE only one byte.
2. If SAVEM or BSAVE is used to save a complete program, remember to clear your computer to MAXRAM to gain that additional storage space.

When possible, the most efficient use of space is to leave the program stored in the cleared area and save only one byte.

Memory is a precious commodity in our portable computers. By managing machine language files properly, it's possible to save thousands of otherwise wasted bytes. □

Please help us rate this article's value. If you've found it very valuable, circle 173 on the Reader Service Card. If it was moderately valuable, circle 174—and if it wasn't valuable to you, circle 175.

ADD THE PICDISC™ TO YOUR PORTABLE* AND GET DESK TOP COMPUTER PERFORMANCE

SOFTWARE FEATURES:

- The industry standard CP/M 2.2™ operating system, which provides for access to all popular CP/M based software (including dBASEII™, Supercalc™, and T/Maker™).
- Complete Utilities Package includes:

  Filer — A menu driven LOAD/STORE program for transferring individual files (or total memory) to disc

  Modem — Public domain communications package (both terminal and disc file transfer modes)

  Utilities — DISKCOPY, COPY, FORMAT, and CP/M Utilities.

HARDWARE FEATURES:

- Lightweight (4.5 lb.) battery powered 3.5 inch microfloppy system.
- 360K bytes/diskette (same as on the IBM PC).
- Approximately 20 hours on a single battery charge assuming normal disk access.
- 32K bytes additional RAM in the PICDISC — converting your portable to a 64K byte CP/M 2.2 microcomputer.
- Includes all cables, mounting hardware and battery charger.

Complete Hardware/Software System described above — Only **$599**

SAVE ON POWERFUL INTEGRATED SOFTWARE — when purchased with PICDISC:

T/Maker — an integrated software package that provides:

- Word Processing
- Spelling Checker with a 50,000 word Dictionary
- Spreadsheet
- Relational Database Manager

Complete System above **with** T/Maker for **$799** (T/Maker sold separately for $300)

*Immediately available for the TRS-80 Model 100 (portable must have 32K bytes RAM) and the NEC8201 and OLIVETTI OM-10 pending FCC approval.

Call or write: **PERSONAL INTEGRATED COMPUTERS (PIC) (800) 421-6300**
18013 SkyPark Circle, Ste. D., Irvine, CA 92714 (714) 261-0503

Common Radio Abbreviations

CW — Continuous wave, or Morse Code
RTTY — Radio teletype, using radio to enable machine communications
QSO — Communication session
UTC — Universal Coordinated Time, or Greenwich Mean Time
CQ — General call message; sender wants to talk to anyone who replies
RST — Signal strength; measured as three digit number indicating strength, interference and noise levels
KN — Address station only transmit, sender awaiting reply
QTH — Transmitter's location

It's sure a lot more convenient than having to use either a tape or disk drive. And it's battery powered so it can be used with other portable equipment.

The following program turns your Model 100 into a great CW keyboard. It'll even remember the starting and ending times of your QSO and automatically update the station log. Function keys make it possible to output most of your QSO without any typing. Other features include:

- Input and output speeds are independent so you can type well ahead of the transmission.
- Two cursors appear on the screen. One indicationg which character is being transmitted and the other for the keyboard input.
- The output speed is displayed on the label line and can be changed at any time by pressing the corresponding function key.
- The call sign of the other station need be entered only once and pressing a function key will send the ID sequence.
- Pressing a function key will call CQ for you, send your QTH, or describe your station.
- Output can be halted by pressing the Enter key. To restart at that spot, press Enter again.
- Hitting the Escape key will clear the screen, the buffer and stop output.
- The program is short and written in BASIC so it can be easily modified to fit your station.

HAMMING IT UP

Type in the listing making the following changes:

1. Change line 660 to hold your call sign.
2. Change line 760 to hold your QTH and name.
3. Change line 900 to hold your call sign.
4. Change line 940 to hold information about your station. Keep it short.
5. Eliminate all Remark statements, if desired.

After entering the program be sure to save it in memory (i.e. SAVE "CW"). The menu will display CW>BA whenever you turn on the computer. You can run the program and check the operation, other than sound, without attaching it to a transmitter.

Why Handle Files One at a Time? Let XOUT/XIN from BKI do the work for you.

Eliminate tedious (and fault prone) load/save/kill and format procedures on your MODEL 100. XOUT/XIN programs automatically create/read and display RAM and external directories. Resulting free space is displayed as files are selected/deselected to aid in memory management. Menus and prompts provide a safe, easy-to-use file management utility—an amazing productivity tool.

Use XOUT.BA to send multiple copies of selected memory files to the tape **(Save)**; or send them directly **(List)**, or via a formatter **(4mat)**, to either the printer or the screen. Selected files can simply be removed with the **Kill** command and confirmation. An external directory is automatically created for each copy of a file set that is saved (containing creation date and time, and an ordered list of names and file sizes). Files saved on tape, including the directory, may also be loaded one-by-one by BASIC or TEXT, in the usual way.

Use XIN.BA to automatically **Load** selected tape files back into memory; or send them directly **(List)**, or via a formatter **(4mat)**, to the printer or the screen.

Typical XOUT.BA Menu

```
*XIN    B 3994 NAMES D  401  SPRED1C 1007
 XOUT   B 3871  CHAP01D 1390  SPRED2C 1507
 DO4MATB 8489  CHAP02D  327
 BA4MATB 2011  CHAP03D 1853
 basic  B    2  DOSU   D   49
 LIST1  D   20  PRTCAPD  464
 LIST2  D  801  paste  D    1
   2221 Free    26968 Used     29189 Total
Save ____ List 4mat ____ Kill Abrt Menu
```

Typical XIN.BA Menu

```
*XIN    B    0 *CHAP01D +200
 XOUT   B    0  CHAP02D -240
 DO4MATB     0  CHAP03D 1853
 BA4MATB     0  DOSU   D    0
 LIST1  D -120  PRTCAPD     0
 LIST2  D  801  SPRED1C 1007
 NAMES  D  401  SPRED2C 1507
   7510 Free    21679 Used     29189 Total
Load ____ List 4mat ____ Next Abrt Menu
```

– XOUT.BA –

- Displays memory contents in memory address order.
- As files are highlighted memory statistics are changed to reflect values if **Kill** selected.
- BA files are stored on tape as standard tokenized files.

– XIN.BA –

- Displays tape contents in tape position order.
- As files are highlighted memory statistics are changed to reflect values if **Load** selected.
- If the file name exists in both the tape and memory directories, the difference (+,-,0) in size is shown.

- Label line alternatives with statistics line by toggling the label key.
- Any combination of files can be highlighted by positioning the pointer and pressing space or enter. No action is taken until commanded by a function key, and then all highlighted files are affected.
- The **4mat** command invokes the BA4MAT.BA program to format BA files and the DO4MAT.BA program to format DO files.

Skeleton BA4MAT.BA and DO4MAT.BA programs are provided as examples for interfacing existing formatters. Full featured BA4MAT.BA and DO4MAT.BA programs, already interfaced with the XOUT/XIN programs, are offered as separately priced items. DO4MAT.BA and BA4MAT.BA format a single file if executed from the main menu or multiple files if executed via XOUT or XIN.

– DO4MAT.BA –

- Formats documents using embedded command descriptions for many features, including columns, underlining, **bold print**, filling and adjusting.
- Optional headers and footers may include the date, time and page number.
- Specify printer make and model. (Customizing directions given for printers not yet implemented.)

– BA4MAT.BA –

- Formats BA files so that the individual basic commands are listed one per line indented from the basic line number.
- Additional indentation occurs to diagram the IF-THEN-ELSE structures in the program.
- Pagination including the date, time and page number are provided.

XOUT.BA/XIN.BA
DO4MAT.BA (skeleton)
BA4MAT.BA (skeleton) 49.95
DO4MAT.BA (full featured) 39.95
BA4MAT.BA (full featured) 29.95

Buy two programs take $10 discount.
Buy all three take $20 discount.
MD residents add 5% Sales Tax.

All programs come on cassette with documentation.

Send Check or Money Order to:
BKI
PO Box 218
College Park, MD 20740
Questions and COD call (301) 345-9473

To explain the use of the program, let's run through a sample session. Turn on the computer, set the date and time to UTC or whatever time you want to use in the log. Place the cursor over CW.BA and press Enter.

The screen will clear and the cursor appears in the upper left corner. Press the Label key to get a display of the function keys. Notice F5 will call CQ. Press F5 and CQ message appears on the screen. The sending cursor will move across the letters as they are sent out.

Suppose WB8TLF answers. Start with a clear screen by hitting Escape. Then type "[" (open bracket). It will not appear on the screen but it initiates the saving of everything typed up to the first "space."

So type [WB8TLF and press the space bar. WB8TLF will be sent out to the transmitter and you'll see the putput cursor moving.

Next press F1 to send the ID. "WB8 TLF DE K8TT" appears on the screen and is transmitted.

Follow that by hitting the F2 key. This prints "TNX FOR CALL — QTH IS BOWLING GREEN, OHIO ? BOWLING GREEN, OHIO — NAME IS LOU ? LOU — YOUR RST IS 599 ? 599".

Notice that the RST report is at the end. If it is not 599 then remove any 599s and replace with the correct numbers. You'll have plenty of time before the output catches up.

Finally, press F1 again which prints WB8TLF DE K8TT. Then type KN which turns it over to the other station. The call and the starting time have been saved. Notice that very little typing is necessary for the entire first round of the QSO.

Now while the other station is talking, hit Escape to clear the screen, press Enter to stop output, hit F! to print the opening ID and type somethings you want to say on the next round. When the other station is finished hit Enter and your message will go out.

At the end of the QSO type F4 to have the station log brought up to date. The log is stored under LOG.DO and you can make changes using TEXT. Also, the search function (F1) allows you to quickly locate a call sign that's in the log. So during a QSO you can make a quick check to see if that station has logged on before.

INTERFACE TO THE TRANSMITTER

Pin 20 of the RS-232 connector on the back of the 100 is the data terminal ready signal (DTR). Normally it is at −5 volts. It can be changed to +5 volts by the statement OUT 178,0 and back to −5 volts by OUT 178,64.

You'll notice these statements are used in the program for output. The program assumes the statement OUT 178,0 will turn on thetransmitter. This information should be enough to enable you to construct the proper interface for your transmitter.

For many solid state transmitters, it's only necessary to ground the key line. Figure 1 shows a very simple circuit used to connect a Heathkit SB104 key line. It consists of a 2N2222 type NPN transitor, a 1N914 diode and two resistors. The +5 volts applied to its base allows the transistor to conduct and thus ground the key line.

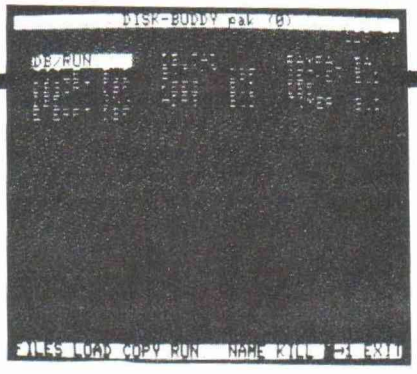
PROGRAM DETAILS

Here's a line by line discussion of some important elements of the program to help you gain some insight to

Civilize the DISK/VIDEO INTERFACE
MAKE SAVAGE THE MODEL 100

NOW AVAILABLE FOR THE MODEL 200

With DISK-BUDDY software for your D/VI, only function keys need touch your disk files!



Twelve programs for one low price, work together to give the TRS-80 Model 100 unique disk file handling abilities. Access disk files from menu, just like a RAM file. Commands you were tediously typing become simple function key selections. And that's just part of the power of the DISK-BUDDY PAK. It does things you can't:

- Create "superfiles" the length of the disk, over 170,000 bytes!
- Print out, or display on either screen, or copy to disk or other device, a disk data file *of any length*, **WITHOUT USING ANY ADDITIONAL RAM!**
- Furthermore, transfer records can be "filtered", an example:

  An address file on disk can contain more than 1300 entries. You can move to RAM, or screen, or printer, etc., those records which contain "California" and "Tennis" or whatever. Four logical modes of search are available.

- Also: Features to run, load, save, sort, kill, measure, append, and name, disk files and RAM files, and much more.

PCM Magazine (March, '85) said: ". . . *an excellent buy*" . . . "*manual is extremely well written*" . . . "*will substantially increase the speed and ease of operation of the M-100 with the D/VI.*"

That was the idea in the first place.

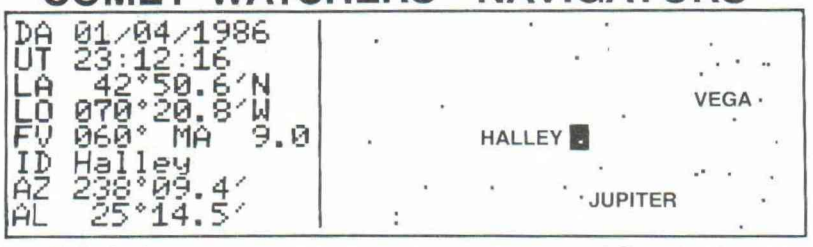
TO ORDER THE DISK-BUDDY PAK (disk and manual): Send name, address, and check or money order for $39.95 plus $2.00 postage and handling to the address below. (For COD's call: 212-243-2129)

BuddySystems
220 West 24th Street
New York, NY 10011

Circle 4 on Reader Service Card

Circle 25 on Reader Service Card

COMET WATCHERS – NAVIGATORS



Spot Halley's Comet among the stars, planets, Moon, and Sun, displayed just as you see the sky, at any time, from any place. Point out any of 180 celestial bodies with the cursor. ASTRO shows name, brightness, direction, and altitude. Manual and cassette for 24K TRS-80/100. **$39.95 + $2.00 S/H, Visa, M/C. Loquor Enterprises, 3 Heneage Lane, Hanover, NH 03755**

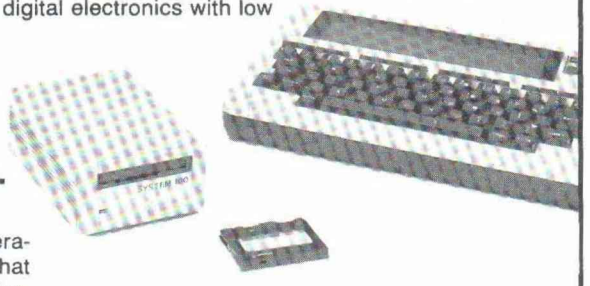
ASTRO — A PLANETARIUM IN YOUR LAP

NEW MASS STORAGE SYSTEM FOR ONLY $69.95

GREAT PERFORMANCE — INCREDIBLE PRICE

A&J Micro Drive would like to announce its new portable System 100. This mass storage system, designed for the Radio Shack Model 100, offers high speed storage for the price of a cassette.

The System 100, with electronics and software designed by A&J Micro Drive, uses the latest Micro Wafer Technology developed by Entrepo Inc. The new system combines high speed digital electronics with low cost, high performance Micro Drive Technology.



INTERESTED . . .

The 100's compact operating system is smaller than that of the Radio Shack Disk Drive. The latest release of the operating system may be down loaded by calling the computers at A&J Micro Drive using the simple instructions included with the unit.

The System 100 may be small enough to fit into a corner of your briefcase and require only 4 "AA"-size batteries for months of use — but don't be fooled, our new unit is packed with state of the art electronics. It will give you ultra reliable program loading as fast as the disk, and twenty times faster than the cassette.

The System 100 uses a miniature endless loop tape cartridge called a Micro Wafer. The Micro Wafer, approximately the size of a credit card, is completely enclosed in a protective housing. A built-in cover retracts as the tape is inserted into the drive, exposing the video-grade digital magnetic tape to the read/write head. Micro Wafers come in several lengths, allowing the customer to choose the length best suited to his application.

Manufacturer's Specifications

System 100
A&J Micro Drive
1050 E. Duane Ave. Ste "I"
Sunnyvale, CA 94086
(408) 732-9292

Price: $69.95

Baud Rate: 14,000 bits/second
Tape Speed: 8 inches/second
Capacity: 2K bytes/foot tape
10' = 20K bytes
62' = 124 K bytes
Lengths: 10, 20, 35, 50, & 62'
Power Supply: 4 "AA" cells
Connection: Uses RS-232 port
Cable: 30 inch RS-232 attached
Size: 6 x 4 x 2.5 inches
Weight: 24 ounces

STILL INTERESTED . . .

The price of $69.95 includes a drive system with cable attached, one Micro Wafter, operating instructions and one-year membership to the A&J Bulletin Board. Price effective through 1985. Wouldn't you like to have on under your Christmas tree?

Circle 1 on Reader Service Card

MORSE CODE

the techniques and some understanding of how it works.

A number of things are accomplished in lines 40 through 180. We clear string space, initialize the variables, fill the C$( ) array from the data statements, clear the screen, print the cursor, make sure the transmitter is off by sending OUT 178,0, enable function key interrupts and fill out the label line. SP = 0 sets the speed at the maximum of around 18 to 20 words per minute (wpm). BF$ is the buffer which holds what you type. F keeps track of the front of the buffer and is used to locate the sending cursor. E monitors the other end of the buffer and positions the input cursor. G is a flag to start and stop output and is toggled between +1 and −1 by the Enter key.

Lines 190 through 200 drive the program alternatively looking for keyboard input and things in the buffer to output.

Keyboard input is handled by the INKEY$ function (lines 220-300). If there is no input then we kill some time by a subroutine to balance timing with what happens when some key is pressed. This is necessary since this entire routine serves as part of timing loop which determines output speed. We have to do this if we want both an input and output cursor.

Line 230 makes it possible to delete characters not yet output while line 240 gives the Escape key power to restart the program.

In line 250 the [key makes it possible to store the calling stations call sign ID$ and stores the date and time in T$ for the log. C% is a flag that keeps storing characters in line 290 until a space is encountered.

In line 260 the Enter key toggles G which in line 330 will not allow output if it is −1. Line 270 screens out any characters we don't want and line 280 prints legal characters at the location determined by E, upgrades E and F and takes care of end of screen scrolling. Finally line 300 stores the character in the buffer to be output later.

Lines 320 to 410 output Morse code to the transmitter if the buffer is not empty and the stop output toggle is not −1. Line 340 picks up the front character in the buffer, 350 prints output cursor on to of that character on the screen, if the character is a word space line 360 sends the word space subroutine and in line 370 the ASCII number of the character is converted to an index for the array C$() that will select the Morse code or that character.

Line 380 peels of the dots and dashes given by C$( ) and branches to the ap-

propriate dot or dash subroutine. After the code for the character has been sent line 390 follows it with a character space. Line 400 replaces the output cursor with the character just sent and upgrades the output cursor location in F. Lastly, in line 410, the buffer has the front character just sent, stripped away.

THINGS THAT GO BUMP IN THE NIGHT

No matter how carefully a program is written there will be unexpected things that can go wrong especially when some one other than the programmer is operating. Known bugs can usually be corrected by additional programming but sometimes that would make the program too complicated or take too much extra effort. Let's discuss things that can go wrong and how to avoid problems with them.

A string can only hold 255 characters. Thus, if you get carried away using the function keys and typing real fast you can exceed this limit. When this happens the program will break and give you an LS error — meaning the string BF$ is too long. Since there are 40 characters to a line on the screen, you should take care not to have the output cursor more than six screen lines away from the input cursor.

You must exit the CW program using F8. This will reset all function keys to their default settings. If you exit the program any other way then the function keys will not work. For example, if you get an LS error as explained above and try to list the program with F5, it won't work. You'll have to type LIST. The way to correct the situation is to type RUN, hit Enter and then exit the program using f8.

When you have an error that exits the program, it may happen just as the output has been set to turn on the transmitter. The transmitter is stuck sending out a carrier. To correct this, type RUN and the program will shut down the transmitter. Otherwise, turn off the transmitter or it will blow out components if it is not rated for continuous duty.

When you have filled up all the lines on the screen, it will scroll up for the next line. This takes a lot of time and makes the code element being sent at the time too long. This means that after you reach the bottom of the screen, one character per line will go out sounding funny. One way to avoid this is to type all but the last letter on the line, then watch the output cursor until it reaches a space between words and then, at that moment, type the last letter. This means

Circle 61 on Reader Service Card

STOP BUYING BATTERIES!!

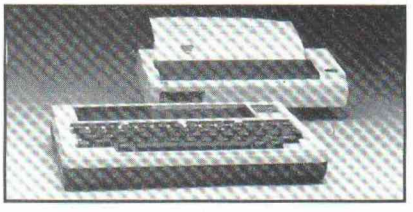
COMPU-CHARGER™ powers or charges the batteries in your portable computer while you drive.
Plugs into car cigarette lighter.
For Model 100/200, NEC-8201, OLIVETTI M-10.
Includes 4 AA Nicad batteries.
$29.95 postpaid

COMPU-CHARGER

25171 Costeau Laguna Hills, CA 92653 (714) 859-8286

PORTABLE EXPANSIONS

MODEL 100/200 EXPANSION MODULES!
SEE OUR FULL PAGE AD IN THIS ISSUE



TTXpress MODEL 1280 $139
Portable Thermal Printer
FREE printer cable

Half the size of a Model 100, battery operated (4 "C" cells, internal), 2.2 lbs., uses 8½" wide white thermal paper, 40 cps unidirectional (50 cps with A/C adaptor), 80 or 160 chars./line, condensed, enlarged, emphasized, bit graphics, true descenders, underline, H/V tabs. . .

Accessory kit for above $24
Includes A/C adaptor, 80 ft. roll of paper, and a simulated leather case.

THINGS JUST FOR THE NEC PC-8201A
SideCar 128K RAM cartridge $259
See our August '85 Full Page Ad
PSCALC $88
A spreadsheet program in a 32K ROM CHIP. Plugs into the ROM socket.

FREE SHIPPING, HANDLING, AND INSURANCE
for Cont. USA. Ordered today—shipped tomorrow UPS. 30-day total satisfaction, money back guarantee. We honor Visa, M/C, AmExp, and Money Orders. Checks take 3 weeks to clear.

PURPLE COMPUTING
(800) 732-5012
(805) 987-4788 *(in Calif.)*
420 CONSTITUTION AVE., CAMARILLO, CA 93010

Circle 46 on Reader Service Card

that the word space is a little longer and that will go unnoticed.

The label key will toggle the label line on and off. If you leave it on when you reach the bottom of the screen and force the seven lines to scroll, the screen will not reflect the right sequence. The CW output is still perfectly good, only you will have difficulty telling where you are. Just remember to turn of the label line if you are going to a seventh line. You can still turn it on for a look without upsetting the screen.

If you start the program, the screen clears, the cursor appears in the upper left corner and you start to type but nothing happen, check the Caps Lock key. If it is not down the program won't work. It only accepts uppercase letters.

You may notice an output speed change when you type as characters are being transmitted. This is supposed to be balanced out by the size of the delay loop in line 800. It's set at 18 but you may have to use trial and error to find a value that will remove the speed change. □

Please help us rate this article's value. If you've found it very valuable, circle 161 on the Reader Service Card. If it was moderately valuable, circle 162—and if it wasn't valuable to you, circle 163.

```
10 'CW keyboard with auto-log for the M-100
20 'BY K8TT (5/27/85)
30 '
35 'Initialize
40 CLEAR 600
50 SP=0
60 DIM C$(50)
70 FOR I=1 TO 47
  :READ C$(I)
  :NEXT I
80 CLS
90 PRINT CHR$(154);
100 OUT 178,64
110 F=0
  :E=0
  :G=1
120 BF$=""
130 KEY ON
140 ON KEY GOSUB 900,760,940,980,660,600,,890
150 KEY1,"ID"
  :KEY2,"QTH"
  :KEY3,"RIG"
160 KEY4,"LOG"
  :KEY5,"CQ"
170 KEY7," "
  :KEY8,"QUIT"
180 IF SP=0 THEN KEY 6,"20WM" ELSE IF SP=20
  THEN KEY 6,"15WM" ELSE KEY 6,"10WM"
184 '
185 'In-out calling sequence
190 GOSUB 220 'get key
200 GOSUB 320 'output cw
210 GOTO 190
```


8K RAM

$29.95

+ $2.00 SHIPPING

No assembly required.

NEW

LAPWORD™

Machine language word processor for M100, M200, NEC 8201A. 3,280 bytes. $49.95 plus $2.50 shipping. $10.00 discount with RAM CHIP order.

Call or write The Covington Group / 310 Riverside Drive, Suite 916, New York City, NY. 10025 / 212-678-0064, 846-1700.

Circle 12 on Reader Service Card

SHED A NEW LIGHT ON YOUR MODEL 100

The Glare Shield©

The Glare Shield© eliminates glare and eases eyestrain when using the M100. The frosted Acrylic diffuser spreads light evenly across the LCD for improved visibility without hot spots.

- Diffuser closes to form a dust cover.
- All cable ports remain accessible.

Send your check or money order for $29.95 to:

CORIOLIS INCORPORATED

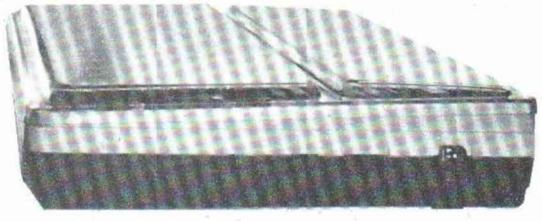
1924 Cedar Lake Parkway
Minneapolis, Minnesota 55416

Minnesota residents add 6% sales tax. (Postage and handling included)

Circle 9 on Reader Service Card

```
215 '
216 'Store & display key entries
220 K$=INKEY$
    :IF LEN(K$)=0 THEN GOSUB 800
    :RETURN
230 IF ASC(K$)=8 THEN GOSUB 700
    :RETURN
240 IF ASC(K$)=27 THEN GOTO 80
250 IF K$="[" THEN ID$=""
    :C%=1
    :T$=DATE$+CHR$(32)+LEFT$(TIME$,5)
    :RETURN
260 IF ASC(K$)=13 THEN G=-1*G
270 K%=ASC(K$)
    :IF K%<>32 AND (K%<44 OR K%>90) THEN 800
    :RETURN
280 PRINT @E,K$;CHR$(154);
    :E=E+1
    :IF E=319 THEN E=E-40
    :F=F-40
290 IFC%=1 THEN ID$=ID$+K$
    :IF K$=" " THEN C%=0
300 BF$=BF$+K$
310 RETURN
315 '
316 'Output cw to DTR port
320 IF BF$="" THEN RETURN
330 IF G=-1 THEN RETURN
340 O$=LEFT$(BF$,1)
350 PRINT @F,CHR$(255);
360 IF O$=" " THEN GOSUB 560
    :GOTO 400
370 CW$=C$(ASC(O$)-43)
380 FOR J%=1 TO LEN(CW$)
    :IF MID$(CW$,J%,1)="-" THEN GOSUB 480
     ELSE GOSUB 430
390 NEXT
    :GOSUB 530
400 PRINT @F,O$;
    :F=F+1
410 BF$=RIGHT$(BF$,LEN(BF$)-1)
420 RETURN
425 '
426 'Send dot
430 OUT 178,0
440 GOSUB 580
450 OUT 178,64
460 GOSUB 580
470 RETURN
475 '
476 'Send dash
480 OUT 178,0
490 FOR D%=1 TO 3
    :GOSUB 580
    :NEXT
500 OUT 178,64
510 GOSUB 580
520 RETURN
```


THIS HARD COVER:



- *Prevents broken keys & scratched screen*
- *Blocks dust, spills & things that get dropped*
- *Protects your 100 from other items in a briefcase*
- *Creates the ultimate lap machine*
- *Is made of unbreakable Eastman PETG clear plastic*

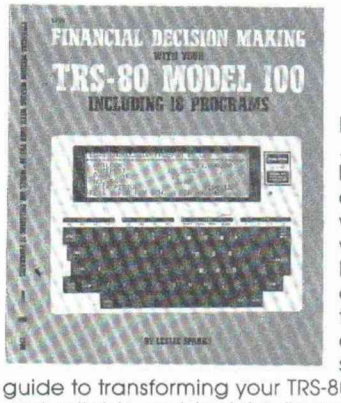
+ Only $18.00
+ Includes Air Mail
+ Immediate shipment

30 day money back satisfaction guarantee
Chk. or M.O. TX res. add 5% Prop Legs not included

THE SOUTHWORTH CO. 4001 F HAWTHORNE AVE. DALLAS, TX 75219

Circle 54 on Reader Service Card

Financial Decision Making with your TRS-80™ Model 100



Including 18 Programs by Leslie Sparks

Entrepreneur . . . executive . . . broker . . . banker . . . businessman . . . homeowner . . . **anyone** who wants to make his money work harder and to have better control over his financial future will appreciate this extremely well-written and eminently practical sourcebook. It's a hands-on guide to transforming your TRS-80 Model 100 into a powerful and reliable assistant for financial planning and decision-making. Includes a series of programs that make even the most complicated calculations and number manipulations a snap . . . provides all the explanation and advice you need on how and why these programs make it possible to handle all those financial problems that probably would have demanded an accountant's services in pre-micro days! 144 pp., 96 illus. Paperback. Publisher's List $9.95 Order No. 1799P

To Order, Call Toll Free: 800-233-1128 (In PA, HI, or AL, Call Direct: 717-794-2191)

TAB BOOKS Inc.
P.O. Box 40
Blue Ridge Summit, Pa. 17214

Circle 66 on Reader Service Card

```
525 '
526 'Send char space
530 OUT 178,64
540 GOSUB 580
550 RETURN
555 '
556 'Send word space
560 OUT 178,64
570 FOR D%=1 TO 3
    :GOSUB 580
    :NEXT
    :RETURN
575 '
576 'Delay
580 GOSUB 220
    :FOR I%=1 TO SP
    :NEXT
590 RETURN
595 '
596 'Change speed
600 IF SP=0 THEN SP=20
    :KEY 6,"15WM"
    :RETURN
610 IF SP=20 THEN SP=100
    :KEY 6,"10WM"
    :RETURN
620 IF SP=100 THEN SP=0
    :KEY 6,"20WM"
    :RETURN
655 '
656 'Send CQ
660 CQ$="CQ CQ CQ CQ CQ CQ CQ CQ DE K8TT K8TT
    K8TT K "
670 BF$=BF$+CQ$
680 PRINT @E,CQ$;CHR$(154);
    :E=E+LEN(CQ$)
    :IF E>319 THEN S=(INT((E-320)/40)+1)*40
    :E=E-S
    :F=F-S
690 RETURN
695 '
696 'Delete a character
700 IF BF$="" THEN RETURN
710 PRINT @E,CHR$(32);CHR$(8);CHR$(8);CHR$(32);
    CHR$(8);CHR$(154);
720 BF$=LEFT$(BF$,LEN(BF$)-1)
730 IF C%=1 THEN ID$=LEFT$(ID$,LEN(ID$)-1)
740 E=E-1
750 RETURN
755 '
756 'Send QTH
760 Q$="TNX FOR CALL - QTH IS BOWLING GREEN, OHIO
    ? BOWLING GREEN, OHIO - NAME IS LOU ? LOU -
    YOUR RST IS 599 ? 599"
770 BF$=BF$+Q$
780 PRINT @E,Q$;CHR$(154);
    :E=E+LEN(Q$)
    :IF E>319 THEN S=(INT((E-320)/40)+1)*40
    :E=E-S
    :F=F-S
```


DON'T MISS

THE LATEST ADVANCE
IN MODEL 100/TANDY 200
SOFTWARE

X-TEL™ by the creators of TELECOMMUTER™

- Use TEXT while online in TELCOM: Download letters and upload a reply in one terminal session
- Exchange .CO, .BA and .DO files with other computers, bulletin boards, and information utilities
- Standard XMODEM error-checking protocol
- List and Kill Files online in TELCOM
- Compatible with Telecommuter and other desktop communications software supporting XMODEM

Specify Radio Shack Model 100 or Tandy 200 computer
Price: $50 on MS-DOS diskette or cassette
MasterCard and Visa accepted.
Please call or write for further information.

Sigea Systems, Inc.
19 Pelham Road
Weston, MA 02193
(617) 647-1099

SO SIMPLE

Circle 50 on Reader Service Card

FX, RX Owners

THIS (Draft Print) or THIS (NLQ Print) (5 x size)

Install our new LetterWriter NLQ upgrade kit in your printer and you can choose NLQ (or any of 15 other print features) by simply tapping your printer panel buttons. NLQ print has four times the resolution of draft print. That means finer character detail, no visible dots, and impressive-looking documents. The FX version even adds IBM Graphics printer compatibility. With LetterWriter in your FX or RX, you may never need to buy a letter quality printer. Why not get LetterWriter for your printer today?

LetterWriter NLQ print
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

FINGER PRINT™ LetterWriter™
NLQ Upgrade Kit
by:
Dresselhaus Computer Products, Glendora, CA
Call (818) 914-5831 for dealer nearest you.

$79.95 FX **$59.95 RX**

For all FX-80/100 and RX-80/100 printers including F/T and + series. Simple plug-in installation. Complete instructions included.

Circle 30 on Reader Service Card

```
790 RETURN
795 '
796 'Balance timing
800 FOR I=1 TO 18
   :NEXT
   :RETURN
805 '
806 'Morse code
810 DATA --..--,-...-,.-.-.-,-..-.
820 DATA -----,.----,..---,...--,....-,.....
830 DATA -....,--...,---..,----.
840 DATA ---...,-.-.-.,.........,-...-
850 DATA ........,..--..,........
860 DATA .-,-...,-.-.,-..,.,..-.,--.
870 DATA ....,..,.---,-.-,.-..,--,-.,---,.--.
880 DATA --.-,.-.,...,-,..-,...-
881 DATA .--,-..-,-.--,--..
885 '
886 'Quit
890 CALL 23164,0,23366
   :CALL 27795
   :MENU
895 '
896 'Send ID
900 S$=ID$+"DE K8TT "
910 BF$=BF$+S$
920 PRINT @E,S$;CHR$(154);
   :E=E+LEN(S$)
   :IF E>319 THEN S=(INT((E-320)/40)+1)*40
   :E=E-S
   :F=F-S
930 RETURN
935 '
936 'Send station information
940 R$=" RIG IS HEATH SB104A - 50 WATTS OUT TO
    BEAM ON 20 AND VEE ON 40 M - TRS-80 MODEL 100
    IS SENDING THE CW. "
950 BF$=BF$+R$
960 PRINT @E,R$;CHR$(154);
   :E=E+LEN(R$)
   :IF E>319 THEN S=(INT((E-320)/40)+1)*40
   :E=E-S
   :F=F-S
970 RETURN
975 '
976 'Log the contact
980 OPEN "RAM:LOG.DO" FOR APPEND AS 1
990 PRINT #1,CHR$(62)+T$+CHR$(32)+ID$+CHR$(32)+
    DATE$+CHR$(32)+LEFT$(TIME$,5)
1000 CLS
   :PRINT"FREQ HRST MRST NAME QTH"
1010 LINE INPUT "";Q$
1020 PRINT #1,Q$
1030 CLOSE #1
1040 F=0
   :E=0
   :BF$=""
   :CLS
   :RETURN
```

EZB™

ENCompass ZERO BASED BUDGETING

Easy does it - with EZB

In minutes you will have at your fingertips an incredibly flexible budgeting tool designed for home and business use. With EZB multiple calculations can be made simultaneously within exacting (zero base) budgetary constraints.

Money/Time/and Space management complexities are swiftly made plain on your Model 100.

Monthly figures can be instantaneously changed to weekly/daily/hourly/yearly as well as percentages, etc.

The package contains "make sense" household budgeting and food cost profiles for immediate comparison and use.

Price and profit projections, simply and quickly accomplished are among numerous business applications.

Price $29.95. VISA and Mastercard. Make Checks payable to:

ENCompass™ en

1373 E. Whitton, Phoenix, AZ 85014 (602) 955-3124

EZB - *One Honey of a Program*

Circle 21 on Reader Service Card

TRS-80 ALWAYS AT SALE PRICES

COMPUTER DFW CENTER

WE SHIP FAST!

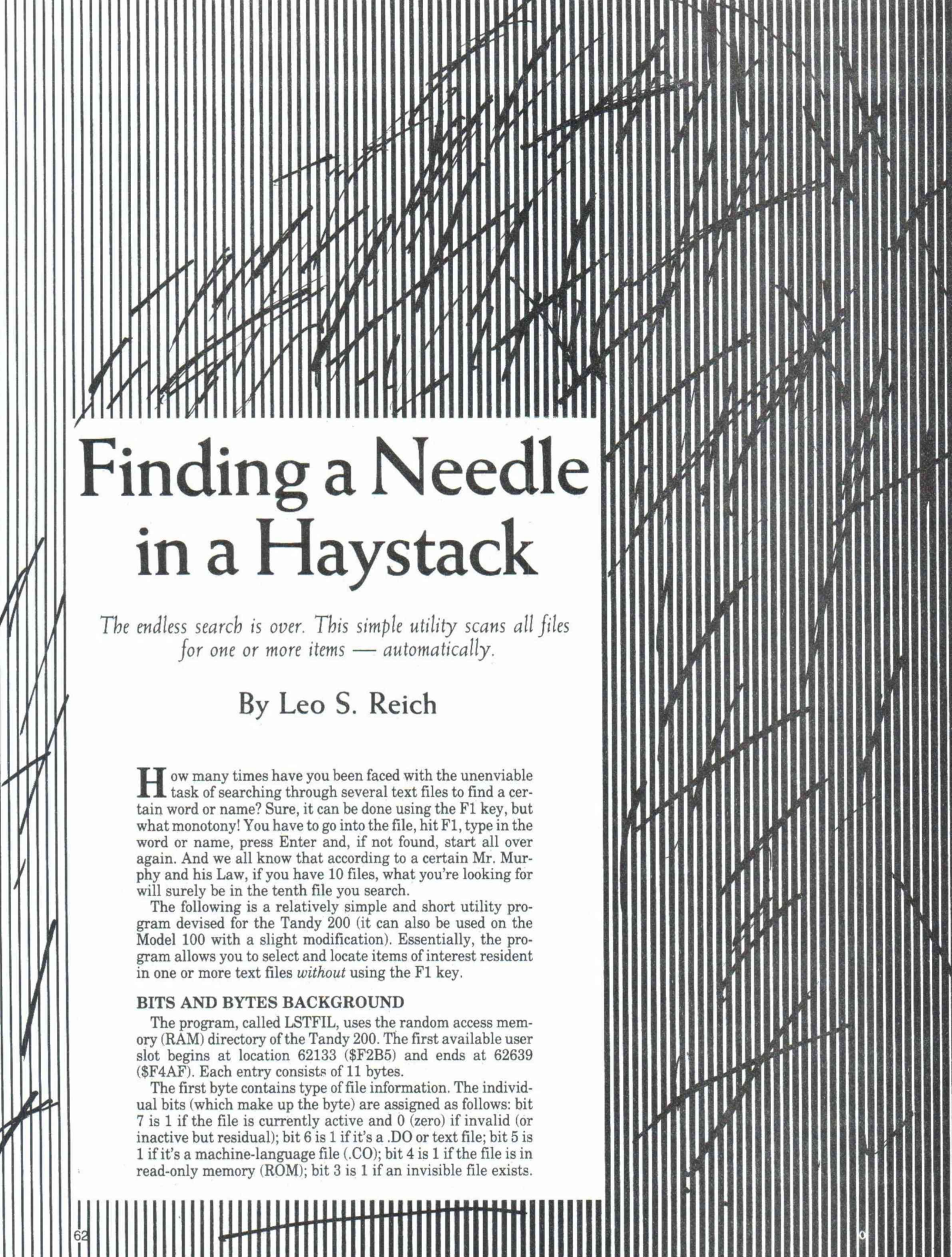
DFW COMPUTER CENTER
326-MAIN ST.,
GRAPEVINE, TEXAS 76051
(817) 481-SALE

OUR TRS-80s Have the Radio Shack warranty

To get YOUR SALE price CALL:

1-800-433-S A L E

Circle 15 on Reader Service Card



Finding a Needle in a Haystack

The endless search is over. This simple utility scans all files for one or more items — automatically.

By Leo S. Reich

How many times have you been faced with the unenviable task of searching through several text files to find a certain word or name? Sure, it can be done using the F1 key, but what monotony! You have to go into the file, hit F1, type in the word or name, press Enter and, if not found, start all over again. And we all know that according to a certain Mr. Murphy and his Law, if you have 10 files, what you're looking for will surely be in the tenth file you search.

The following is a relatively simple and short utility program devised for the Tandy 200 (it can also be used on the Model 100 with a slight modification). Essentially, the program allows you to select and locate items of interest resident in one or more text files *without* using the F1 key.

BITS AND BYTES BACKGROUND

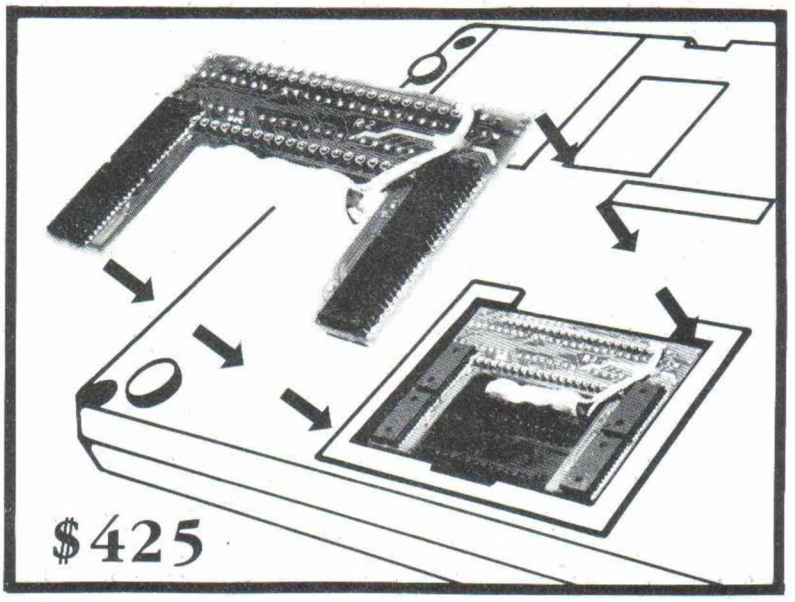
The program, called LSTFIL, uses the random access memory (RAM) directory of the Tandy 200. The first available user slot begins at location 62133 ($F2B5) and ends at 62639 ($F4AF). Each entry consists of 11 bytes.

The first byte contains type of file information. The individual bits (which make up the byte) are assigned as follows: bit 7 is 1 if the file is currently active and 0 (zero) if invalid (or inactive but residual); bit 6 is 1 if it's a .DO or text file; bit 5 is 1 if it's a machine-language file (.CO); bit 4 is 1 if the file is in read-only memory (ROM); bit 3 is 1 if an invisible file exists.

Give your Model 100

128K RAM

Installs as easily as plugging in a socket



Software included, transfers from bank to bank. Works like main menu! Includes powerful RAM Basic that lets any program regard the 128K as one continuous bank.

PCSG says: Satisfaction guaranteed or your money back within 30 days

As amazing as it seems you can upgrade your Model 100 to 128K of RAM in just 60 seconds.

It comes to you right out of the box looking just like the picture. You just open the little compartment on the back of your Model 100 with a quarter and it just pushes right into place. You can then put the cover back in its place.

You then have 4 banks of RAM of 32K each. The additional three banks also work just like your Main Menu.

You push a function key and you are in the second bank. Push again and you are in third, again, then fourth. Press it once again for your original bank.

It has its own built-in NiCad battery that recharges right from the Model 100 and its guaranteed for a full year.

What is really great is that you can copy a file from one bank to another with just a function key.

Each bank is like having another Model 100, and all the built-in programs as well as any snap-in ROM programs appear in all four banks and work the same way. Your widebar cursor moves from file to file and you access any file or run any program just by pressing ENTER.

What lets you copy any file from one bank to another is a snap-in ROM from PCSG called RAM+, that comes at no extra charge. It just pushes right into the little socket in that same compartment with the 96K expansion unit.

Not only does this firmware let you copy a file from bank to bank, but you can make a copy of any file within the same bank instantly with a function key. Great for Lucid spreadsheets!

Copy a file from bank to bank with a function key

You can also rename a file, or kill any file with just a function key. Plus you can do a whole lot of other useful things like setting the date, day and time with function key ease. You even have a function key that lets you use non-Radio Shack printers without having to make those tricky dipswitch settings.

RAM+ lets you cold start any one of your banks without affecting the other three. That means that anytime you want you can clean out a bank's entire memory, but leave intact all the files in the other banks.

What is also fantastic is that you don't have to have the ROM in place to use the additional RAM. Whenever you take out the snap-in ROM it leaves behind a tiny machine code program that lets you switch from bank to bank just by pressing ENTER.

This lets you use your ROM socket to snap-in other ROMS like LUCID spreadsheet, WRITE ROM text processor, or DISK+ ROM file transfer program, and use them in any or all four banks. All of these, by the way, are available from PCSG.

When you are ready to copy a file from one bank to another or use any of the other fantastic functions we talked about you can just snap the RAM+ ROM back into place.

Everybody that has this 128K system in their Model 100 is so excited, because it gives them four times the capacity and all banks work just like the Main Menu.

And what has made a lot of people happy is that the system bus, located in the same compartment, is left free for you to plug in a DVI or the Holmes Engineering/PCSG portable disk drive.

The ability to copy a file from bank to bank instantly with a function key, plus all of the other features make this RAM extension truly an engineering masterpiece.

Some people hesitate when they think of installing something, and then others are skeptical that any additional hardware could be as good as the Model 100 itself. That's why we sell these 96K expansions on a 30 day trial. Simply return it within 30 days for a full refund if you are not satisfied. Priced at $425. MC VISA COD.

1(214)351-0564

PORTABLE COMPUTER SUPPORT GROUP

11035 Harry Hines Blvd. No. 207, Dallas, Tx. 75229

VISA / MASTER CARD / C.O.D.

Circle 33 on Reader Service Card

ANNOUNCING!!

100 MARKETPLACE 200

A New Classified Ad Section to Serve 100/200 Users

Got some hardware/software you want to sell or trade? Got a BBS or a User Group function to promote?

If so, then a classified listing in **MARKETPLACE** is for you.

Here's all you have to do:

1. Complete the coupon below (legibly, please!).
2. Include form of payment.
3. Mail to the address below.

Each number series (telephone, street, zip code, price, catalog, memory) counts as one word.

Minimum number of words is 18 (approx. 3 lines).

MULTIPLE INSERTION DISCOUNT: You may subtract 10% for each insertion after the first one.

DEADLINES: The day your ad and payment must be in our offices is on the 15th day of the second month preceding the cover month (in order to be in the August issue, copy and payment must be received no later than May 15).

MARKETPLACE Form

Please use this form to write your classified ad. Each space is one character. Please leave one space between words, numbers, abbreviations. If necessary, please start a new line rather than hyphenating a word. Make sure all your information is correct. Please count the words accurately, fill in the amount enclosed and credit card information or check the payment enclosed box. (Even if you place your order by phone, this form may help you organize your ad message and figure costs). Place in envelope, and mail today.

(This grid, if filled, is equivalent to a one-inch box. If you need more space, please use a separate sheet of paper. When filling the grid, please leave one open space between words.)

Number of words _____ × $2.00/word = $_____

☐ One Inch Box ($72) ☐ Screen Tint, add $10. Number of Insertions?_____

Name: _____

Address: _____

_____

Phone: ( ) _____

☐ Visa/MasterCard # _____ Exp. Date _____

☐ Payment Enclosed Amount $_____

Mail to: Portable 100/200 **Marketplace**
P.O. Box 250, Highland Mill, Camden, ME 04843

Telephone: 207-236-4365

Hardware

FOR SALE — PG Design 32K RAM module, works perfectly, with documentation, $180. R. Whitehead, 1 Quorn Hunt Road, West Simsbury, CT 06092.

Instruction

"Computer Writer." The newsletter for writers who use computers. Dynamite. $3 sample. $15 yr. DENNIS, 1332 Manitoba-1, S. Milwaukee, WI 53172.

M100 OWNERS MANUALS — 150 copies free to a qualifing educational institution. Auto-wares, Inc., 440 Kirktland S.W., Grand Rapids, MI 49507. 616-243-2125

Services

Portable Computer Message System (PCMS) — Dial: (914) 693-0293, 8 Bit, No Parity, Full Duplex, 300 Baud.

NATIONSERV ONLINE INFORMATION NETWORK 618-847-2291. Job service, downloads, play games, shopping mall, classifieds, message center, etc. NationServe, P.O. Box 391, Fairfield, IL 62837.

Software

MORTGAGE SOFTWARE: Easy to use programs that take the guesswork out of selecting a mortgage. (1) Fixed and Variable Rate Amortization schedules, (2) Mortgage Comparer and (3) Tax Advantage Evaluator. $10 ea. $25/3. Softronics, 26 Birch Lane, Eatontown, NJ 07724.

8K MEMORY EXPANSION: $22 each. Model 100, PC-8201. Large stock, fast delivery. S/H Free! Warranty. Send check/M.O.: Solid Devices, Box 42332-R, Portland, Oregon 97242, (503) 231-7607.

EPROM CAPABILITY FOR MODEL 100 prototypes available. ROM socket to 27C256 Translator. Bare board for loaded, test clip for on-board programming from your programmer. Technology First, 9235 Chesapeake St., Suite B, San Diego, CA 92123.

MODEL-100 QUICK REFERENCE CARD. Instructions for all programs. No more flipping through your manual! Only $2.50. Eighty Computing, P.O. Box -154, Orinda, California 94563.

MAGIC FOR YOUR 100. Knock your friend's socks off!! Six magic programs written by a professional magician. Includes "Impuls": sure to fool top programers, as well as magicians. Some practice required. $19.95 — Ned Way, PO Box 15182, Orlando, FL. 32858.

MON100 machine language monitor 16K $30; LOK100 password security 8K $19; Morse Code tutor 16K $19; Basic screen dump 8K $19; Count-Write fast word and sentence tally 8K $19; Home Inventory 24K $19. Structured Software Services 9233 NE 269th St., Battle Ground WA 98604.

User Groups

Custom medical software for 100/200. Clinical & business programs. Priced from $39.95. Richard Elliott, MD, 42 Walnut Lane, Davis, CA 95616.

Wanted

WANTED: Any information (especially printed) that would help determine if a program written for the model 100 will run on the NEC/PC-8210A. Also wanted - info on specific differences between 100 and NEC. Conversion hints helpful. Write: A. Johnson, 108 Camp St., Middletown, CT 06451. Thanks!

Thus, an active text (or ASCII) file has a first byte value of 192 ($CO). The second and third bytes contain the starting address of the file itself (least significant byte first) and the next eight bytes the file name.

Of those eight bytes, the first six allow for a file name up to six characters (spaces replace characters if less than six characters are used). The remaining two bytes are reserved for the file extension (the period is omitted).

LSTFIL uses this information to locate and identify files to be scanned. This process is continued for succeeding files.

SEEK AND YE SHALL FIND

When the program is run, you'll be asked to enter the number of items you're searching for. If you are looking for just one, you'll be prompted to enter it. If you're looking for more, you will continue to be prompted until all have been entered. Hitting Enter following the last entry begins the search.

The program displays the 11 bytes associated with each file plus the name and starting address for valid ASCII files. If the file has an extension other than .DO (or is an inactive or "killed" text file still residing in memory), it's not scanned and the program continues to the next file.

When an active ASCII file is encountered, it's scanned rapidly. If an item being searched is found, a line appears in reverse video indicating what was found and where (file name) and is then followed by a "Break" statement.

At this point, you can either abort the program or continue by typing "cont". Each time an item is found, the program pauses and alerts you.

File scanning continues until the first empty user slot is encountered. When this happens, the screen clears and the message "SEARCH OVER!" appears in reverse video.

SPEAKING FROM EXPERIENCE

You should be careful when selecting only a partial word or name since all words and strings containing it will cause needless program breaks. This is not only aggravating but time consuming.

In a test run which involved six text files (totaling 4200 bytes, three programs and five inactive files (resident in memory), the duration of the run until the first empty slot was about 40 seconds. Of course, this was searching for one item — more items will take longer to run.

STILL HUNGRY?

LISTINGS, HERE!

HEY, GET YOUR LISTINGS!

Spicy programs pepper the world of Tandy portable users . . . more than can be included in the pages of Portable 100/200 magazine. The magazine will continue to include listings—and for those with heightened cravings, the Editors are pleased to offer a monthly supplement of rich desserts.

The Portable Program Review will tempt you each month with a more'ish diet; more listings to run on the Model 100, Tandy 200 and NEC . . . more games . . . more utilities . . . more graphics . . . and home-cooked favorites.

Popular *pièces de resistance* from former issues will be brought back to savor. And all offerings, old and new, will be served by the Portable 100/200 magazine's technical staff who will be on hand to answer your questions.

Your 12-issue newsletter subscription will enhance the benefits of both a valuable magazine and computer .

So if you feel the need to snack between meals, supplement your Portable 100/200 appetite with The Portable Program Review. Here's how to make the newsletter's next seating:

1. Locate the Portable 100/200 Reader Service Card in this issue.
2. Check the letter for The Portable Program Review newsletter.
3. Enclose the card with your check or money order in the amount of $29.97 for One Year (12 issues) of The Portable Program Review newsletter. Or you may pay by MasterCard or Visa. (Please be sure to include the card number and expiration date.)

Bon Appétit

The program is flexible and can be easily modified even by those who only have a fundamental knowledge of BASIC.

NUTS AND BOLTS

As previously mentioned, LSTFIL, which requires about 1200 bytes of memory, can be modified for the Model 100. Line 170 of the program indicates the starting address (62132) of the first user slot of the directory. For a Model 100, change the starting address to 63841.

In line 210, the first three bytes are skipped and only the last eight are considered for scanning purposes. When these contain a .DO extension and the first byte is not zero, the name and starting address of the file are listed. The scanning routine then starts on line 330. However, if the file name does not include the .DO extension or contain a first byte equal to zero, then only the name is displayed and the next file is scanned (line 270).

For a valid ASCII file name, the name is altered to include the normal extension (line 330). Then the valid file is opened and its contents scanned.

Lines 350 to 410 provide for hard copy if needed.

Lastly, when a "needle" is found, a message is displayed in reverse video followed by a break. If you've found what you wanted, you can either continue by typing "cont" or stop it by hitting F8. If you continue, the program searches until it finds the first empty user slot and prints "SEARCH OVER!" (line 270). □

Please help us rate this article's value. If you've found it very valuable, circle 170 on the Reader Service Card. If it was moderately valuable, circle 171—and if it wasn't valuable to you, circle 172.

```
10  'LSTFIL
20  'L.S. REICH
30  '
40  'FOR ITEM(S) SELECTED, NAME TEXT FILE(S)
50  'FOR ITEM(S) & DISPLAY WHERE LOCATED IN FILE(S)
60  '
70  CLS
   :CLEAR 2000
80  '
90  PRINT @120, "";
   :INPUT"Enter no. items to be searched: ";NI
   :PRINT
100 '
110 FOR JJ=1 TO NI
   :PRINT "Enter item #";JJ;
   :INPUT IT$(JJ)
   :PRINT
   :NEXT JJ
   :CLS
120 '
130 AA$=""
   :BB=1
140 '
150 FOR J=BB TO 2000
   :REM MORE THAN NEEDED TO LOCATE 46 USER .DO FILES
160 '
170 LL=62132+J
   :AA=PEEK(LL)
   :REM START OF USER SLOT #1
180 '
```

The TouchBase NEC Modem Package

NOW, THE ONLY INTERNAL MODEM FOR THE NEC-8201A COMES WITH **AUTO-DIAL** *AND* **AUTO-LOG-ON** SOFTWARE!

• *Internal* • *Proven operation*
• *Battery-free* • *Low power*

NOW ONLY **$99.00**

TouchBase Design
1447 South Crest Drive
Los Angeles, CA 90035
(213) 277-1208

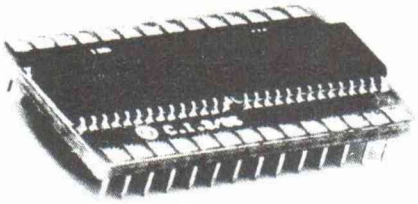
Circle 55 on Reader Service Card

```
190 PRINT AA;"/";
200 '
210 CC=CC+1
    :IF AA>64 AND AA<91 AND CC>3 THEN GOTO 230
     ELSE GOTO 270
    :REM ONLY LAST 8 BYTES OF FILE ENTRY
220 '
230 AA$=AA$+CHR$(AA)
240 '
250 IF INSTR(AA$,"DO")>0 AND PEEK(LL-10)>0
     THEN PRINT AA$
    :PRINT
    :PRINT "Starting Addr.= ";
    :ST=256*PEEK(LL-8)+PEEK(LL-9)
    :PRINT ST
    :CC=0
    :PRINT
    :GOTO 330
260 '
270 IF J/11=INT(J/11) THEN PRINT AA$;
    : IF AA$<>"" THEN AA$=""
    :CC=0
    :ELSE CLS
    :PRINT @133, "";
    :PRINT CHR$(27);"p";" Search over!"
    :PRINT CHR$(27);"p";" Search over!"
    :BEEP
    :PRINT CHR$(27);"q"
    :END
280 '
290 NEXT J
300 '
310 END
320 '
330 AA$=MID$(AA$,1,LEN(AA$)-2)+".DO"
340 '
350 OPEN AA$ FOR INPUT AS 1
360 '
370 LINE INPUT #1,TT$
390 '
410 PRINT TT$
420 '
430 FOR D=1 TO NI
440 '
450 IF INSTR(TT$,IT$(D))>0 THEN PRINT
    :PRINT CHR$(27);"p";"Item desired, ";
     CHR$(34);IT$(D);CHR$(34);", is in ";AA$
    :BEEP
    :PRINT CHR$(27);"q"
    :STOP
    :GOTO 470
460 '
470 NEXT D
475 '
480 IF EOF(1) THEN 510
485 '
490 GOTO 370
500 '
510 CLOSE
    :CLS
    :BB=J+1
    :AA$=""
    :GOTO 150
```


24K Expansion RAM

For the Model 200

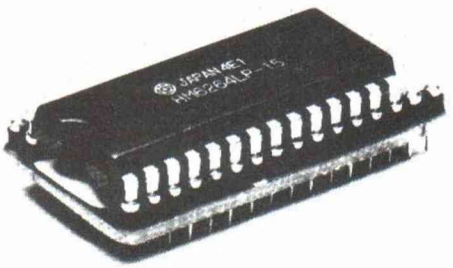
$125. each **$240. for two**



8K Expansion RAM

For the Model 100 & 8201

$27. each **$75. set of 3**



These Modules are easily user installable and they feature:

- Low Power CMOS Static RAM
- 30 Day Satisfaction Full Refund Policy
- High Quality Sockets
- Instructions Include Test Program Listing
- One Year Warranty

M/C, VISA, Check or Money Order

Shipping-Add $1.50 UPS Ground
or $4.00 2nd Day Air.
CA Residents add 6% Sales Tax

Cryptronics, Inc.

11711 Coley River Circle, Suite 7
Fountain Valley, CA 92708
Phone: (714) 540-1174

Circle 13 on Reader Service Card

A SUPER UTILITY LIBRARY FOR YOUR MODEL 100

VARIABLES

Call this machine language program from any BASIC program and instantly read (on screen or printer) the CALLing line number, the name and type of every declared variable, and the CURRENT value of each variable. Call this routine as often as desired, observing changes in variable values as your basic program executes. Debugging was never easier!

VARIABLES — Only $19.95

ASSEMBLER + DISASSEMBLER

The complete ASSEMBLER for novice or professional programmer. Full 8080/8085 instruction set PLUS comment lines PLUS integer and string constants PLUS memory allocation PLUS mainframe style printed listing. Many helpful features for speedy debugging. The DISASSEMBLER takes you on a guided tour of all ROM and RAM machine language programs, with output to screen or printer. This utility combination is menu driven and is so easy to use.

ASSEMBLER + DISASSEMBLER — Only $34.95

C-SORT

Why is this the best sort program for your Model 100? It sorts 3-byte pointers instead of records, allowing much larger files to be sorted. Sort algorithm is machine language for SPEED and efficiency. Output to screen, printer, cassette, or RAM file. Key on any field of fixed or variable length records. Simple to use!

C-SORT — Only $24.95

C-NUMBER

This renumbering utility replaces BASIC line numbers and all references to line numbers in increments specified by you. C-NUMBER does complete error checking before making any changes to your valuable software. Fast machine language routine renumbers big programs in a few seconds. For every serious programmer.

C-NUMBER — Only $19.95

Order the complete MODEL 100 UTILITY LIBRARY for only $79.95 — a savings of nearly $20. Cassette only. All prices include User's Guide and shipping inside the U.S. Watch for our announcement of the Model 200 Utilities Library!

YOUR MODEL 100 SERIAL NUMBER MUST ACCOMPANY EACH ORDER.

QUEUE SOFTWARE SYSTEMS

Please send check or Money Order to:

QUEUE SOFTWARE SYSTEMS

4528 Belleview / Suite 210, Kansas City, MO 64111

Circle 43 on Reader Service Card

GIGO (from page 43)

DATEBOOK UPDATED

The article "Datebook for the Disorganized" by Ray Mendenhall in your July issue is an excellent program. However, I found it to be more useful by changing the following lines:

```
 760 INPUT CD$
 970 CLOSE:FOR X=1 TO 500:NEXT
     X:GOTO 200
1010 CLOSE:GOTO 200
```

Then add these new lines:

```
 805 IF LEN(CD$)>5 THEN IF CD$
     <> LEFT$(A$,LEN(CD$)) GOTO
     910 ELSE 850
 806 IF LEN(CD$)=5 THEN
     CD$=CD$+RIGHT$(DATE$,3):
     IF CD$ <> LEFT$(A$,8) GOTO
     910 ELSE 850
```

The change in line 760 and the addition of lines 805 and 806 allow a search for any date other than the current month.

When F5 is typed, a date prompt is printed in reverse video at the bottom right side of the screen. If the date is in the current month, it is necessary to enter only a two digit day. If the date is in the current year, it's necessary to enter both the month and day as MM/DD. However, if the date requested is in another year, you must enter the full date form MM/DD/YY.

The changes in lines 970 and 1010 return the program to the current month and day after any search. As written, the original program returned to the current month but to the date used in the previous search.

Robert J. Hennessey
Needham, MA

JUMP, JUMP, JUMP

Here's a complaint about the current format of your magazine. Its a chore to read it each month because most of the multi-page articles are split up and I'm constantly jumping back and forth just to read articles in sequence. Please consider changing this in future issues so your readers don't have to work to get all the useful information you provide each month.

Edward Reddy
72446,360

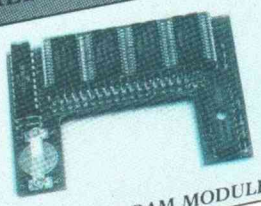
Unfortunately due to size, shape and color requirements of our advertisements we are forced to jump stories to the back of the magazine. It's not something we like to do, just something we all have to live with. —Ed. □

ADVERTISERS INDEX

PG#	RS#	ADVERTISER
56	1	A & J Micro Drive
50	5	ARMS
6	2	Acroatix
43	48	American Technologies
48	3	Axonix
54	6	BKI
55	4	Buddy System
48	7	CISS
19	8	CSA Software
50	11	Cabbage Cases
43	67	Charge-On
57	61	Compu-Charger
3	10	CompuServe
58	9	Coriolis
58	12	Covington Group
52	56	Covington Group
67	13	Cryptronics
9	14	Custom Software
30	63	DCM Data Products
61	15	DFW Computer Center
50	62	Data Transfer
51	16	Delker Electronics
60	30	Dresselhaus
51	23	Economy Computers
49	19	Elexor
61	21	Encompass
18	22	FACS
47	20	Fort Worth Computers
47	24	Kangaroo
46	18	Life Sciences Software
56	25	Loquor
51	64	MCI Mail
—	64	Marketplace
49	27	Merritt
25	26	Micro Demon
CIII	28	Micro Peripheral
42	29	Nictrix
46	31	Node
33	41	P.C.S.G.
15	34	P.C.S.G.
39	32	P.C.S.G.
21	36	P.C.S.G.
26	35	P.C.S.G.
45	37	P.C.S.G.
63	33	P.C.S.G.
69	38	PG Design
CII	39	PG Design
53	40	PIC
40	44	Polar
42	53	Pomerleau
22	42	Portable Basics
65	—	Portable Program Review
29	17	Prairie Power
10	45	Purple Computing
57	46	Purple Computing
16	49	Purple Computing
68	43	Queue Software Systems
37	47	Radio Shack
4	51	Sigea
60	50	Sigea
13	52	Softmate
59	54	Southworth
59	66	Tab Books
66	55	Touchbase
CIV	57	Traveling Software
1	58	Traveling Software

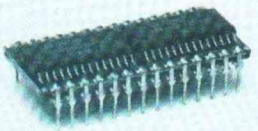
The Number One Choice

PG Design RAM modules have become the number one choice for Model 100, Tandy 200 users, not just because more people are using *PG Design* RAMs than any other brand—But because our name has become synonomous with *PREMIUM QUALITY, RELIABILITY,* and *IMMEDIATE CUSTOMER SERVICE.*



MODEL 100 64K RAM MODULE

MODEL 100 8K RAM MODULE



TANDY 200 24K RAM MODULE

When you purchase any *PG Design* RAM module, you're buying directly from the people who design, manufacture and service the product.

We develop the most advanced products of their kind by using the latest technology and the highest quality components available. Before we bring any product to market, it is carefully evaluated in the field by professionals. If it doesn't meet their standards, it doesn't meet ours. And when we finally bring our product to market, it's the finished product, It works as we say it will, and it will keep on working reliably. *"Our reputation for excellence is riding on each and every RAM module we ship."*

Whether it's an 8K or 64K RAM module to expand the memory of your Model 100 or a 24K RAM module for your Tandy 200, be assured you are buying the best when you buy ***PG Design*** RAM modules.

Model 100
64K RAM module—$375 ea. **32K RAM** module—**$250** ea. **32K** upgrade—**$150**
8K RAM modules—**$29.95** ea. Set of three **$84.00** (available for NEC 8201A)

Tandy 200
24K RAM modules—**$139** ea. **$135** ea. two or more

We absolutely guarantee the quality and perfect performance of all ***PG Design*** RAM modules or your money back!

We supply easy to follow instructions with each of our products. And, we are eager to assist you on the phone if you should need help with the installation or operation of your RAM module.

To order, call us (313/727-2744), or write. All orders are shipped within five working days after receiving your order. We accept VISA, Master Card, personal checks or money orders.

PG Design Electronics, Inc. 66040 Gratiot, Richmond, Michigan 48062 (313) 727-2744
Dealer inquiries invited. *TANDY is a registered trademark of TANDY CORP.*

PG Design

Circle 38 on Reader Service Card

Tandy's ROM

By Carl Oppedahl

Interactive Solutions is a nice ROM-based package, with medium-powered database, spreadsheet and text-formatting capability. The three programs are well integrated — selected material from a data file may be loaded into a spreadsheet or document, and spreadsheet results can be pasted into a document. The text processor can perform a mail-merge based on information in a data file, as well. Because Interactive Solutions (IS) is in ROM, most of RAM (up to about 27K in a 32K machine) is available for data records, spreadsheets and documents.

WHAT YOU GET

IS comes in the same standard small padded brown binder as other Tandy portable software. Enclosed are a ROM chip, an 82-page manual, 16-page quick reference booklet and two errata sheets. The binder has a flimsy plastic compartment for the ROM chip when not in use; mine was deformed in shipment so that it would no longer hold the chip right. If you leave IS installed all the time this is obviously not a problem.

INSTALLATION

The IS instructions tell you how to insert the ROM into the option ROM socket. If you have another ROM in there from before, you will have to follow the approriate procedure to deinitialize the previous ROM before removing it. Then you type in a one-line BASIC program, which when executed from the main menu (see sidebar) gets you into the option ROM menu.

ILLUSTRATION BY MARJORIE STRAUSS

IS provides three programs — a data manager, spreadsheet and text formatter. Progress between and among the programs is via a number of submenus; in most cases F8 will get you to the next higher menu, and pressing it a few more times gets you back to the familiar Model 100 main menu.

THE DATA MANAGER

The data manager is pretty neat. You can set up one or more data files, each with its own record layout. Each data file consumes two menu filenames (both .DO files), one for the data itself and one for the layout. These files may be sorted according to any field, and records can be extracted according to conditions on any or all of the fields. The extracted records may be printed, displayed on the screen, or pasted into a text file. As discussed below, the extracted records may be pulled into printed correspondence in full mail-merge fashion.

The limit on database size is twofold; each database takes up two menu slots and the databases taken together with any other RAM files cannot exceed the RAM memory capacity of the computer. RAM files not currently in use may be stored on cassette or on 3.5 inch floppy disk, but not on the DVI.

No provision is made for entering records into a data base except by manual typing, though a patient hobbyist could find ways to massage a previously existing data file into the layout expected by IS. Fortunately IS *does* allow its output to go to a file.

Last month I reviewed Ultimate ROM from Traveling Software; like IS, it is an option ROM containing three programs. Because two of the Ultimate ROM programs (T-base and T-Writer) overlap two of IS, it makes sense to compare them. (The programs that do not overlap are IS's Data Calc and Ultimate ROM's Idea, an outline or idea processor.)

The IS Data Manager operates on only one data file at a time; there is no relational capability. By way of comparison, Ultimate ROM allows relational retrieval of information from two or more data files. T-Base has more report generation flexibility built in, but either program lets you paste data reports into documents, giving you the ability to edit and rearrange reports as needed. Both let you sort records on a selected field.

DATA CALC

The spreadsheet program in IS is called Data Calc, and it's only a little better than Radio Shack's Spectaculator. You can't give each cell a different formula, but rather must assign formulas for each row or column. The sheet can be as large as 99 rows or 99 columns.

Data Calc is not very well error-trapped. It tends to lock up the keyboard if you accidently give Data Calc the filename for a .CO file other than one created by Data Calc. According to the manual it can destroy your files if turned off during recalculation. So be sure to put in fresh batteries before using it. Remember that when the batteries get too low the Model 100 turns itself off automatically.

You can load information from Data Manager into Data Calc with just the touch of a few keys; that's nice and no other Model 100 software I know of does this. It lets you paste all or part of a spreadsheet into a document, a standard spreadsheet feature. Data Calc does not, however, read from or write to DIF (data interchange format) files, limiting your ability to pass information between Data Calc and other spreadsheet programs.

Interactive Solutions
Three-in-one ROM software
Tandy/Radio Shack
Fort Worth, TX 76102
$149.95
Circle No. 141

THE WORD PROCESSOR

IS provides a nice text processor, augmenting and interacting with the built-in program TEXT. It allows detailed print formatting with spacing over perforations, indentations, headers, footers and nearly every feature you'd expect in a formatter.

IS creates a file containing formatting parameters (xxxCTL.CO where xxx is the beginning of the document file name) for each file edited. You can easily use up menu slots that way. The numerous CTL.CO files are not discussed in the manual at all, except in an incorrect reference on the last page to a single file PRCCTL.CO.

IS also creates a small file called

ROM ON HIGH

Ah, for the good old Model 100 days, when virtually everything was in BASIC and only experimenters used machine language. Mine was a voice in the wilderness when I predicted that machine language conflicts would crop up often in the Model 100.

Nowadays, lots of commercial programs are in machine language and the remainder are a hybrid of BASIC and machine language. Like hotdog vendors near a busy corner, they almost invariably compete for that convenient location just below MAXRAM (62960).

Interactive Solutions (IS), despite its claim in the Radio Shack catalog that it doesn't occupy RAM, nonetheless requires 2.7K of RAM between 60200 and 62960. Prior to using IS, any other machine language program located above 60200 must be saved elsewhere (presumably as a cassette or RAM .CO file). This means, among other things, that you cannot use IS with the Disk/Video Interface, nor with any other machine-language program requiring that area.

If you have some machine language program in place that uses RAM hooks (barcode reader, printer driver, Thinview, ProAid, etc.) it is particularly important to reset the RAM hooks before using IS. Otherwise you'll likely lose all your files in the dreaded return to January 1, 1900.

Machine language programs also have a distressing tendency to contain bugs which, when triggered by an unanticipated input, will lock up the machine (requiring hardware reset) or destroy all your files. In two days' experimentation, I uncovered one bug in IS that caused a lock up.

Regrettably, none of this — not one bit of it — is discussed in the IS manual. It would be bad enough if the manual simply failed to disclose the risks associated with machine language, but matters are worse — the manual does not even reveal that machine language is used. Indeed the manual implies the opposite when it says IS "does not occupy RAM."

The only clue that machine language is used is in the installation process — a command CLEAR 0,60200 is used. A new user may attach no particular significance to this, but a sophisticated user will know that it's time to worry about all the other machine language programs in use.

Tandy assures me that the machine language driver for the 3.5 inch micro floppy drive is designed so that it can be moved to a lower area in RAM, and can thus be used with IS.

— Carl Oppedahl

OPTION ROMS THROUGH THE YEARS

By now we have seen four physically different option ROM styles. The first on the market was Polar Engineering's Option ROM, using a commonly available 8K PROM. Because the pin assignments of Polar's PROM disagreed with Tandy's pin assignments in the Model 100 option ROM socket, Polar had to wrap the integrated circuit (IC) with a thin, flexible printed wiring board that rearranged the pin connections. This package, a rather fragile affair, had to be guided into place with a couple of coins for spacing.

Next on the scene was PCSG's Lucid, an 8K EPROM on a sturdy glass epoxy board, with cutouts and spacers built in for correct spacing and orientation in the socket. The epoxy board rearranges the pin connections to match the Model 100. That technology is used for Disk Plus, Write-ROM and other option ROMs. Some users have reported that the PCSG carrier board has bent one or more contacts in the option ROM socket during removal. It's important to use the ribbon provided and pull the ROM up perfectly straight.

A recent refinement was Polar's use of a Molex carrier for the IC of Traveling Software's Ultimate ROM. The carrier is specifically designed to match the option ROM socket in the Model 100. Again, pin rearrangement is required and a flexible thin printed wiring board is used.

Finally, with IS, we see for the first time a ROM rather than the PROM or EPROM used before. And not only is it a ROM but its pin assignments match those of the Model 100. It fits right into a Molex carrier and into the option ROM socket.

The manner in which the user gains access to the option ROM has also varied from one ROM to the next. Lucid and Ultimate ROM provide main menu filenames which, when selected, make the jump into option ROM. You're aware that you can enter a .DO file from the main menu and this will get you into TEXT. Lucid, a spreadsheet program, follows this convenient style and lets you enter a spreadsheet file from the main menu, thus getting into Lucid with fewer keystrokes.

Polar's Option ROM and IS are simply accessed by a CALL 63012 command; in either case you can set up a one-line BASIC program containing the CALL which may then be used to select option ROM from the main menu. It is too bad IS does not allow entry into a particular database file or spreadsheet through menu selection. Instead you must get to, say, Datacalc, through selection on two menus, then you must type in the filename manually to the Datacalc prompt.

— Carl Oppedahl

PRT.DO which lets you customize control codes (i.e underscore or italic) specific to your printer. The discussion in the manual neglects to mention that the control codes must be typed in hexadecimal notation.

IS can provide a justified right margin, but the justification is accomplished by inserting whole spaces between words and it looks choppy.

Dot commands take care of the usual margin changes and page skips when inserted in .DO files. Provision is made for loading information from the spreadsheet or data-file part of memory into RAM .DO files.

Both the Ultimate ROM program T-Writer and the IS formatter have mail-merge capability. T-Writer takes information from the file ADRS.DO and IS gets it from the data file of your choice. The other formatting capabilities and features are largely comparable.

DOCUMENTATION

Why does anyone send a $150 piece of software to market without an index in the manual? Many topics are discussed two or three times in the book, so that when you leaf through it to answer a question you cannot be sure you have the complete answer. If there were an index you could go to the three places directly.

The 82-page manual does a good job of explaining the programs by example, but it is poor at spelling out general rules for use of the various functions. For example, in the data manager you may wish to select records for printing based on one or more criteria, and you do this by typing in relational operators and values regarding each field. Some operators have obvious meaning — an equals sign will select only records for which the field is equal to the specified value, and a less-than sign will select records for which the field has a smaller value than that specified.

But one operator, the pound sign (#), is described as a "partial match." The new user eagerly reads on hoping to learn just what is meant by a partial match. Further on the manual states that, "A partial match means that a record with some similarity to the condition specified is selected." Not knowing exactly what is meant by "some similarity," we read on.

Eleven pages later, the pound sign comes up again. We learn, "the pound sign means that the string you type for a particular field has to be at least a partial match to that which has been typed in the record field before a record can be retrieved."

By trial and error I learned what the pound sign really does — it's a search using the logic of the familiar BASIC function INSTR. If the search string appears anywhere in the field of the record being tested, then that record is considered a partial match. A search entry of "#keeper," for example, will retrieve a record containing "bookkeepers." But you could never have determined that from the manual.

The manual lamentably gives no explanation of how high memory (above HIMEM) is used, so you must read between the lines instead.

This program is supported by Language Group II. I found the people there were familiar with it and were able to answer most of my questions. In an industry with widely varying levels of customer support, this makes Tandy look pretty good.

THE ROM ADVANTAGE

Copy protection is not really an issue with ROM-based software like Ultimate ROM or IS. The software is on a medium that is not easily copied so the publisher can be sure of getting his royalty for each copy in use. It's safe against the risks associated with magnetic media, so you never really miss the ability to make backups. Perhaps the nicest aspect of ROM-based software is that the publisher can let you use the software for a while to see if it suits your needs, and you can return it if it doesn't. PCSG and Traveling Software both offer 30-day free trials of ROM software, and I suspect many Radio Shack stores would also accomodate such a request.

If you can get through the manual, you can probably use IS. It is convenient and useful, saves RAM and gives you a good text formatter and data base. □

DON'T GAMBLE ON ANYTHING ELSE!

Have you ever been dealt out of telecommunications in hotels, offices, and other locations while on the road?

Why gamble on finding a modular (RJ-11C) phone jack that accepts your direct connect modem?

Deal yourself a winning hand with the **Black Jack**, the portable modular jack for modems on the go.

- 0-9600 baud
- Fits standard telephone handsets
- Preserves line sensitivity
- Direct connection, not acoustical
- Improved telecommunications
- Insensitive to environmental noise
- Weighs less than ¼ lb.
- Fits easily into a briefcase
- Compatible with Group 3 facsimile equipment

the Black Jack™

For OEM/Dealer/Distributor pricing,
Contact:

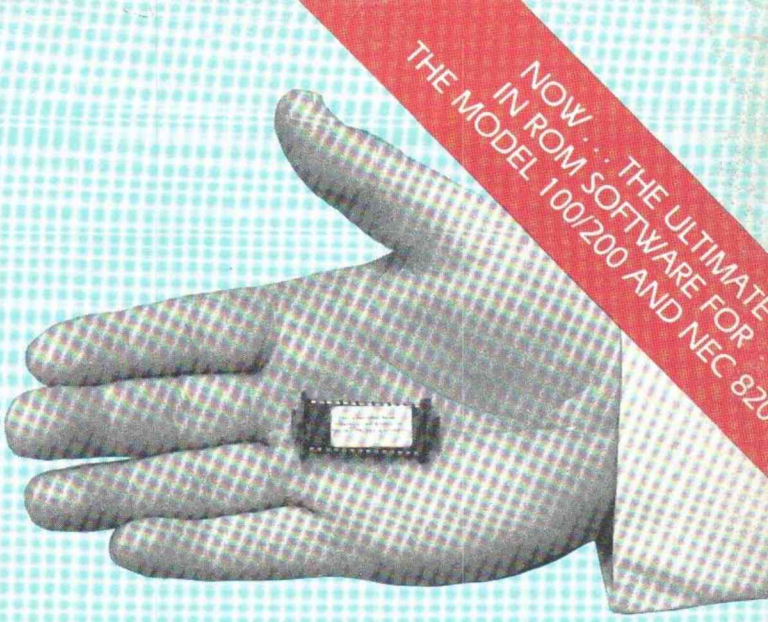
the microperipheral corporation

2565 152nd Avenue NE Redmond, WA 98052 (206) 881-7544

™the Black Jack is a trademark of The Microperipheral Corporation

Traveling Software
introduces everything you would ever want on a single plug-in ROM chip . . .

THE ULTIMATE ROM



The ULTIMATE ROM contains three acclaimed programs:

IDEA! — One of the hottest-selling programs for the Model 100 and NEC PC-8201! Organizes anything from simple lists to complex outlines. Easily reorganizes and searches. Offers many word processing and database capabilities. Develops outlines from rough drafts into finished documents.
Original cassette price: $79.95

T-base — The database reviewers have rated as number one for the Model 100! Lets you design relational databases and set up screen files. Borrows information from fields in other databases. Performs math computations. Creates custom-printed or LCD display reports. **Original cassette price: $99.95**

T-writer — Still the favorite text formatter with owners of the Model 100 and NEC PC-8201. Prints documents created using the built-in TEXT program. Includes justification, headings, footings, underlining, italics, boldface, and more. Produces form letters and mailing labels. Word-Star-like command.
Original cassette price: $49.95

ADDED MEMORY

The ULTIMATE ROM adds another 32K to your computer's memory by storing programs outside precious RAM memory space, freeing RAM for larger data files.

If your computer has a 32K memory already, for example, you can create files up to a whopping 25K in size using T-base, IDEA!, or your computer's TEXT program . . . over five hundred names and addresses in a T-base file.

ADDED CONVENIENCE

With the ULTIMATE ROM you don't need to load programs individually, either. Simply plug in the chip and you're always ready to work — without using slow, clumsy cassette recorders.

The ULTIMATE ROM also works with other memory expansions, like PG Design's 64K RAM module or Purple Computing's NEC SideCar. The ULTIMATE ROM works in any active memory bank on your computer — no need to copy programs from bank to bank.

Only $229.85

A COMPLETE PACKAGE

Each of the three ULTIMATE ROM programs is complete and full-functioned — no features have been trimmed. And you have complete documentation for each program, along with an audio introduction by the renowned Traveling Professor.

THE BOTTOM LINE: IT'S A GREAT DEAL

Three programs. One chip. If you order now, you can receive our free 8K "Ultimate RAM" expansion or a $25 purchase credit. If you need five or more Ultimate ROM'S, call us about our volume price discounts. Traveling Software is so sure you will like the ULTIMATE ROM, it is offering a 30-day money-back guarantee.

FREE RAM OFFER
If you purchase an ULTIMATE ROM before November 30, 1985, you will get your choice of a free 8K "Ultimate RAM" memory expansion for the Tandy Model 100 or NEC 8201, or a $25 credit towards your next TSI purchase over $35.

To order call toll free 1-800-343-8080
For technical information call (206) 367-8090

Now available through Radio Shack stores by express order:
Product Numbers:
M100 90-0409
M200 90-0410

TRAVELING SOFTWARE®

Traveling Software and the Traveling Software logo are registered trademarks of Traveling Software, Inc.
Guardian Rom copyright 1985 Polar Engineering
SideCar is a trademark of Purple Computing